# THE FRIENDLY ARCTIC

VILHJALMUR
STEFANSSON

Given in Loving Memory of

***Raymond Braislin Montgomery***
*Scientist, R/V Atlantis maiden voyage*
*2 July - 26 August, 1931*

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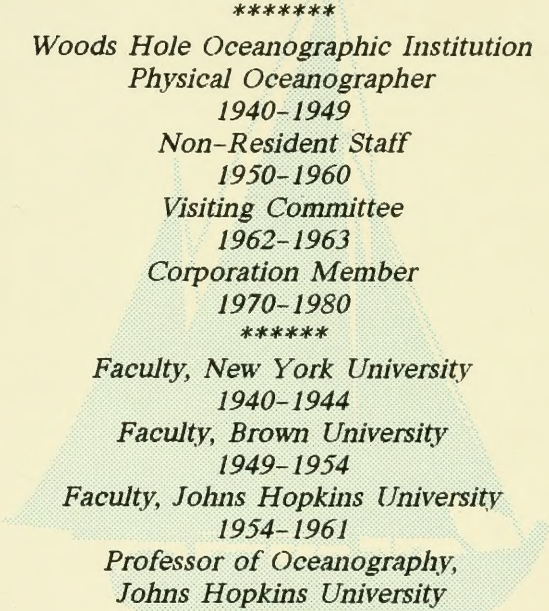

*Woods Hole Oceanographic Institution*
*Physical Oceanographer*
*1940-1949*
*Non-Resident Staff*
*1950-1960*
*Visiting Committee*
*1962-1963*
*Corporation Member*
*1970-1980*

******

*Faculty, New York University*
*1940-1944*
*Faculty, Brown University*
*1949-1954*
*Faculty, Johns Hopkins University*
*1954-1961*
*Professor of Oceanography,*
*Johns Hopkins University*
*1961-1975*

Raymond B. Montgomery

From Mother

Birthday 1922

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# THE
# FRIENDLY ARCTIC

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# THE FRIENDLY ARCTIC

## THE STORY OF FIVE YEARS IN POLAR REGIONS

BY

VILHJALMUR STEFANSSON

AUTHOR OF
"MY LIFE WITH THE ESKIMO"

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# PREFACE

By Vilhjalmur Stefansson,

WHO WAS COMMANDER OF THE EXPEDITION

IN reading the books of other explorers I have commonly found tedious the long accounts of how their expeditions were organized. My own inclination is to say nothing about the organization of the expedition that resulted in the story told in this volume, but many of my friends say that an account of the organization is both important and interesting. I shall compromise between their judgment and my own feelings by a short and general account where they advise a long and detailed one.

The plans of this my third polar expedition developed in my mind gradually during the years 1908-12 while I was engaged in the work of the second expedition. Our experience was then showing us day by day the friendliness and fruitfulness of those parts of the Arctic which are either inhabited by Eskimos or which are immediately adjacent to the Eskimo districts. But I was told by the Eskimos, and I had read the same before in geographies and works of exploration, that the vast unknown areas beyond the Eskimo frontier were devoid of animal life. The Eskimos agreed with the rest of us in thinking that no one could live in those regions except for brief periods, and then only by taking along enough supplies to last for the whole period of what must necessarily be a dash into and a hurried retreat out of a region of permanent desolation.

But I am an anthropologist by profession, and the very reason for the beginning of my work in the North was a desire to learn whatever I could about the Eskimos. I had during these five or six years of continuous residence learned that the Eskimos resemble an uninstructed peasantry in possessing a large measure of native intelligence lying fallow, lacking opportunities of instruction and development. The ignorant classes of all countries have positive beliefs about many things, and a large number of these beliefs have no foundation in fact. I had long since learned that the Eskimos are honest and intelligent, but that they have a higher percentage of unfounded beliefs than any white people with whom I have associated.

I could see no natural reason why the regions beyond the Eskimo frontier should be devoid of animal life. The fact that the Eskimos said so and the fact that geographies and encyclopædias continue to make the same assertion, meant little to me. Professionally, I know the foundations of such assertions, and that encyclopædias do their full share in perpetuating the unfounded beliefs of our ancestors. I satisfied myself, so far as was possible while actually living in the Eskimo country, that the region beyond did not differ from the Eskimo country in any essential respect. I concluded the presumption to be that animal life could be found even in the very center of the icy area. This is a point, as explained elsewhere in this book, which lies about 400 miles away from the geographic North Pole in the unknown region north of Alaska. No one had been nearer to the center of the icy area than Peary when he visited the North Pole. Others had concluded from Peary's evidence that since he had seen no animal life at the North Pole or between it and Greenland, the presumption was that for a greater reason there would be no animal life in more remote (because more distant from navigable waters) ice-covered areas in the region of maximum inaccessibility.*

My conclusion was that animal life had not been seen because it had not been looked for and because it existed under the ice where it would be inconspicuous. Hunting seals under thick polar ice resembles hunting as we commonly think of it less than it does prospecting. Many people had lived for long periods in Pennsylvania, tilling the soil successfully and considering themselves thoroughly familiar with all local conditions, and nevertheless these people were ignorant of the mineral oil contained in the earth below. Seal hunting, as will appear in that part of the book where the methods are described, is analogous to prospecting for oil. No explorer had had that point of view, and it appeared to me that their failure to discover seals when they were not looking for them did not reflect on their intelligence any more than it reflects on the intelligence of Franklin that he lived for a long time in Pennsylvania and died in ignorance of even the possibility of the Rockefeller fortune and of the other things of more consequence that have hinged upon the discovery of oil in Pennsylvania.

I already knew the methods of securing seals, and came south in 1912 firm in the belief that I could go into regions where Eskimos had never been and into which Eskimos were unwilling to go because they believed them devoid of resources, and that I could in these regions travel indefinitely, carrying on scientific or other work and depending entirely on the resources of the country for food and fuel—food being the flesh of animals and the fuel their fat.

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*See map showing "Pole of Relative Inaccessibility," p. 8.

Dr. Anderson and I had just finished, to the entire satisfaction of the American Museum of Natural History, a long polar expedition under their auspices. On that expedition we had already done things which the Museum authorities had supposed to be exceedingly difficult or impossible, and we had done them without special effort, for we had found the conditions far more favorable than they had realized. The Museum authorities were, therefore, in a frame of mind to believe me when I told them that the entire polar area was as easy to make a living in as the district inhabited by the Eskimos, and they were the first to assent to our contention that we could travel where we liked, depending on the country for sustenance.

After securing the support of Dr. Clark Wissler, curator of anthropology in the Museum (under whose direction I had carried out the expedition of 1908-12), I presented the case for the new expedition to Professor Henry Fairfield Osborn, the President of the Museum. He declined at first to support the expedition, not because he lacked confidence in its fundamental principles but because the Museum was short of money and because they were already organizing another polar expedition—the Crocker Land Expedition, commanded by Donald B. MacMillan. They wanted me to wait a year or two till other work was off their hands and they were in a better position to support an enterprise of this sort.

Waiting did not suit me at the time, and I accordingly went to the National Geographic Society, presenting my case to the Director, Mr. Gilbert Grosvenor. Later I presented the same case to the Board of Trustees, who were favorably impressed and with very little delay voted to give me $22,500. I now went back to the Museum and told them that, while I disliked severing my connection with the institution, I should have to do so unless they came forward at once to join the National Geographic Society in their support of the present enterprise. Hereupon the Museum made a special plea to one of its chief patrons and we soon had the further promise of $22,500.

In Boston, the Harvard Travelers' Club, of which I had been a member for many years, lent its moral support promptly to the expedition and later on decided to contribute $5,000. In Philadelphia my old friend, Henry G. Bryant, who was then President of the Geographical Society of Philadelphia, undertook to raise some money and presently secured from one wealthy patron a pledge to buy a ship for the expedition, and from another the promise that he would outfit the ship.

Had these generous promises from Philadelphia come a week sooner than they did the expedition would doubtless have remained under American auspices, for when you have a ship promised and also the outfitting of that ship, you have taken care of the major expenses of an expedition. The $50,000 secured from the three organizations mentioned above would have been amply sufficient to cover other expenses. However, a week before my receipt of Mr. Bryant's letter I had gone to Canada to lay the situation before Sir Robert Borden, who was then Prime Minister.

My first polar expedition, that of 1906-07, had been paid for jointly by the Universities of Harvard and Toronto. The money given me by Toronto University was actually contributed by Sir Edmund Walker, the President of the Canadian Bank of Commerce. As a result of this, Sir Edmund had continued his interest in my polar work. When I now went to Canada, Sir Edmund Walker lent me warm support in my representations at Ottawa. He did this by letter, while another eminent Canadian, Sir Edmund Osler, President of the Dominion Bank, gave me personal support, for he was then a member of the House of Commons. My second expedition had been under the joint auspices of the American Museum of Natural History and the Geological Survey of Canada. The Director of the Survey, Mr. R. W. Brock, had therefore been in direct touch with my work for several years. He was at once willing to use his entire influence with the Government, and went with me to see the Prime Minister.

My idea at the time was that the Canadian Government might join in the support of this expedition as they had already joined in the support of the previous one. The Prime Minister said, however, that while he was inclined to support my plans, he felt them so important and so directly a concern of Canada that he would prefer that the Canadian Government should undertake the whole responsibility and the whole expense of the enterprise. I replied that I could scarcely make to the American scientific organizations the proposal of transfer, but suggested that in case he should open negotiations I would inform them of my entire willingness to surrender the expedition to the Canadian Government.

Sir Robert Borden then wrote letters to Professor Henry Fairfield Osborn, President of the American Museum of Natural History, and to Mr. Gilbert Grosvenor, the Director of the National Geographic Society, offering to take over the expedition. He assured them that the scientific program, as already outlined under their auspices, would be carried out by the Canadian Government, that the expedition would be sent out that present year, and that the entire command of it would remain in my hands exactly as if the work had been under their auspices. In this letter and in the correspondence that followed between these American institutions and the Canadian Government, it was made clear that I was to remain the sole judge of the fitness of all men and all materials and that the scientific direction of the expedition should in every way remain in my hands. That this was made so explicit was due to the forethought of Mr. Grosvenor, who feared that some politician or other at Ottawa might try to influence the course of the expedition, thus interfering with its scientific value.

It was in February, 1913, that the expedition was transferred to the Canadian Government. Before that time I had offered the position of second in command of the expedition to Dr. R. M. Anderson, who had accepted. No other man for that position had even occurred to me, for we had been friends since college days and had already carried out together successfully an expedition on which he had shown himself both admirable as a traveling companion and able and diligent as a field observer and scientific collector.

A man whom I have admired for many years is Captain C. T. Pedersen, commonly known to his friends as Theodore Pedersen. I had known him in the Arctic since 1906. The winter of 1908-09 I visited him frequently when he was wintering in his schooner, the *Challenge*, in the "lagoon" at Point Barrow. We had talked over the possibility of an expedition of geographic discovery, where I should be in command while he was the sailing master. In my mind he was self-chosen for master of whatever ship I might have, just as Dr. Anderson was the obvious man for the position of second in command.

Pedersen was now in San Francisco unoccupied. He at once accepted not only my offer to be commander of the ship, but undertook the task of selecting the best available vessel. A few years before this the whaling trade had come to a sudden stop through a drop in the price of whalebone, and there were ten or more whalers laid up in various ports on the Pacific coast that were supposed to be entirely suitable for further navigation in polar waters. Captain Pedersen informed me at once that the choice was between four ships —the *Herman, Jeannette, Elvira* and the *Karluk*. All these ships were known to me through association with them in polar waters, but I had not the intimate knowledge of them possessed by Captain Pedersen. I authorized the employment of expert ship inspectors, who soon reported that the *Elvira* was unsound, but that the other three ships were in good condition. They agreed with Captain Pedersen that the best of them was the *Karluk*. On the strength of the backing secured from the American organizations I had already concluded the purchase of the *Karluk* before the expedition was transferred to the Canadian Government, whereupon she was resold at cost to the Government.

With the authority and resources of a nation behind us, we now had the opportunity of organizing the most comprehensive polar expedition that ever sailed, for no expedition in history has been so fortunately situated. In some cases naval expeditions have been sent out by governments, but in those cases the purposes have not been primarily scientific. In expeditions that have been primarily scientific governments have sometimes taken a limited part and have granted lump sums of money. We had a more liberal backing, for Canada decided to stint us in nothing that might contribute to scientific success.

The selection of the scientific staff was the first consideration. The sciences to be investigated were anthropology (archæology, ethnology, somatology), biology (botany and zoölogy, both terrestrial and marine), geography, geology, mineralogy, oceanography, terrestrial magnetism. In a scientific staff suitable to carry out investigations in all these sciences there are sure to be men who can accumulate knowledge in other departments also. In that sense such a polar expedition can make all knowledge its province. The sciences named turned out to be by no means the only ones that benefited by the work of our scientific staff.

It appeared at once that, although we preferred Canadians, it was not possible to secure an adequate scientific staff in Canada. In general, we wanted men in whom university training was merely the foundation and who had after graduation settled upon one of these sciences as his life work. Half of our staff had academic training equivalent to that of a Doctor of Philosophy. We were able to secure only five out of our staff of fifteen in Canada. Eventually it was made up as follows: from Canada 5, from Great Britain 3, from the United States 2, from Australia 1, from New Zealand 1, from Denmark 1, from Norway 1, and from France 1.

The following is a partial list of the universities represented in the training of these men, partial because several of them had been in two or more universities: Harvard, Massachusetts Institute of Technology, McGill, Oxford, Queens, the Sorbonne, State Universities of Iowa and North Dakota, Toronto, Universities of Edinburgh and Glasgow, Yale, and technical schools in Norway, Denmark and Australia. Four of the men had previously been on polar expeditions: Mackay and Murray with Shackleton, Johansen with Mylius Erichsen in Greenland, and Anderson with me. Mamen had been on a Norwegian surveying expedition to Spitsbergen.

This list shows that we had to go all over the world to secure our scientific staff. Jenness had just returned to New Zealand from anthropological work in New Guinea, and Wilkins of Australia was in the West Indies. Both of these were secured by cable correspondence. Johansen, the Dane, was engaged in Washington, and Mamen, the Norwegian, in Canada. I made a trip to Europe which resulted in the engagement of Beuchat, Mackay, Murray and McKinlay.

This European trip was partly to secure scientific men and partly to get equipment, especially in the field of oceanography. In this work I was greatly aided by Dr. W. S. Bruce, of the Scottish Oceanographical Laboratory, by Sir John Murray, and by the Prince of Monaco.

While I was in Europe I received the first bad news of the expedition, the resignation of Captain Pedersen. Some one had induced him to believe that he would have had to change his American citizenship for Canadian in order to be master of the *Karluk*. How ill-founded this belief was is best shown by the fact that we replaced him by Captain Bartlett who, although born in British territory, had become an American citizen and retained his citizenship throughout the expedition. Captain Bartlett had been master of the *Roosevelt* under Peary, and had extensive experience with ice navigation in Atlantic waters.

Apart from the comprehensiveness of the scientific scope of the expedition and the large number of scientists, this expedition did not in its outfitting differ materially from that of the recent polar expeditions. The outfitting is, therefore, not worth describing. It was most effectively handled by the Canadian Navy Yard at Esquimalt, near Victoria, British Columbia.

The direction of the expedition was under the Canadian Department of the Naval Service, and therefore at first under the Honorable D. J. Hazen, and later the Honorable C. C. Ballantyne. The expedition was directly under the Deputy Minister, the Honorable G. J. Desbarats, who through five years kept in personal touch with every detail of it in spite of the cares and labors incident to the rapid expansion of the Department of the Naval Service under war conditions. The material outfitting was in charge of Mr. J. A. Wilson, who was then Director of Naval Stores. In Esquimalt the outfitting was handled by Mr. George Phillips, who accompanied us to Nome, and to whose personal care the expedition owes a great deal.

The equipment of the expedition kept growing and growing under our hands, and for several reasons; especially that for the oceanographic work was more bulky and difficult to operate than we had at first realized. Furthermore, we had a scientific staff who were in the main inexperienced in polar matters, but who, nevertheless, had definite ideas of what outfit they must have in order to get along. In some part their ideas were justified by eventual experience, but to a considerable degree our efforts to please them resulted in the hampering of the expedition. It was one of the few drawbacks of our fortunate situation of ample financial resources that we had continually to yield to the argument that after all we could buy and carry this or that if we only wanted to, and that all we would lose in case the thing were not needed would be its money value and the cost of carriage.

For reasons entirely apart from equipment I had decided to divide the expedition into two sections: one under the charge of Dr. Anderson to operate in the vicinity of Coronation Gulf; and the other under my immediate charge to strive towards the pole of inaccessibility and to have geography for its main objective where the southern branch carried forward more detailed and varied scientific studies. This plan necessitated two ships, the *Karluk* for the geographic work, and the *Alaska* to take the scientific men to Coronation Gulf. Later on our outfit grew so that we had to purchase the *Mary Sachs* in Nome to act as a tender to both sections of the expedition and incidentally to carry on oceanographic work under the command of our chief oceanographer, Murray. Later on the loss of vessels and the diversion of others to work not originally intended necessitated the purchase of further ships. These latter purchases are explained in the text of the narrative, for they form a part of the story in the field.

I know myself fortunate, and suppose myself exceptionally fortunate in having many loyal and willing friends. Many of these have helped with this book and some have forbidden me to attach their names to any printed mention of their doing so. To mention the others would seem invidious. Grateful as I am, I shall, therefore, refrain from attempting to express my gratitude to persons and shall merely make a formal acknowledgment to institutions.

I am in the first place indebted in general to the Government of Canada and in particular to the Department of the Naval Service for allowing the use of photographs and other material gathered on the expedition. This was provided for in my original agreement with the Government when they assumed all obligations to me which had previously been entered into by the National Geographic Society and the American Museum of Natural History.

The maps were made for the Department of the Naval Service by the Geodetic Survey of Canada. A few of the photographs used in this book were taken on my expedition of 1908-12. These are the property of the American Museum of Natural History and are used by their consent. The photographs of musk oxen under domestication are used by courtesy of the New York Zoölogical Society. Two photographs used in this volume are reproduced from my previous book, "My Life With the Eskimo," because I had no new pictures which illustrated equally well certain points that had to be brought out.

Most of the photographs used in this volume were taken either by myself or by George H. Wilkins, the official photographer of the expedition, who was with us by a special arrangement with the Gaumont Company of Great Britain. Some photographs of vegetation and of insect life were taken by Frits Johansen, our botanist, entomologist and marine biologist. Through a defect in my records it is possible that two or three of the photographs were taken by other members. However that be, all the expedition photographs are used not by permission of the original takers, but in a few cases by permission of the Geological Survey of Canada, and in the majority of cases by permission of the Department of the Naval Service, whose property they are.

It is possible that minor alterations will be made hereafter in the maps of the expedition. Those published in this volume should, therefore, not be considered final and authoritative. Those requirements will be filled by the official maps of the Government to be issued from Ottawa probably during the year 1922.

All technical publications except certain preliminary reports published in technical journals will be issued by the Government as rapidly as possible.

Such new place names as appear on the maps included in this book are those of men (and in one or two cases women) who have been directly concerned in polar exploration. Preference has been given to members of the expedition. On the large scale maps as finally published by the Government every member will be commemorated, but in this volume some names have had to be omitted because of the scale of the maps. Next after members of the expedition come polar explorers, and in particular those who have worked in the general region covered by the expedition. There are also the names of a few men who have been resident in the Far North for a long time, as whalers, traders, police, and the like.

The most conspicuous features of the map have been named after those high officers in the Canadian Government who were directly instrumental in having this expedition sent north, or who have done something since then through acts while in office to promote polar exploration.

# FOREWORD

BY GILBERT GROSVENOR, LL.D.
*President of the National Geographic Society*

UNDER WHOSE DIRECTION THE ORGANIZATION OF THE EXPEDITION WAS BEGUN

October 18, 1921.

The Macmillan Company,
64 Fifth Avenue,
New York City.

"I AM sending you enclosed the introduction which you have requested me to prepare. It may seem to you at first rather long, but I would ask you to note that my own part of it is very short.

"It seemed to me very desirable that the tributes to Stefansson by Admiral Peary and General Greely should be incorporated in this introduction, particularly as this address by Admiral Peary was his last public appearance. Peary had been very sick for months, but I realized his friendship for Stefansson, and so I asked him if he would not come and present Stefansson to our audience. We (Peary and I) knew at the time that it was to be Peary's last public appearance. I hope you can use his address and Greely's, because these tributes were deliberately prepared by them and have great historical value. In fifty years these words of praise by Peary and Greely will be valued very highly, but they will be forgotten unless tied up in a book. They will mean more to the future than any words of mine.

"Yours very truly,
(Signed) "GILBERT GROSVENOR."

When in the winter of 1913 Stefansson expressed a desire to resume his northern explorations and was seeking financial help, the Research Committee of the National Geographic Society, impressed by the quality of his earlier work, by his originality and resourcefulness, offered to subscribe $22,500 to his expedition. The American Museum of Natural History generously duplicated this subscription.

As the plans progressed, it became apparent that more funds would be needed for the expanding program, and Mr. Stefansson, with the approval of the above organizations, approached the Premier of Canada to ascertain if the Canadian Government desired to participate in the work. Sir Robert Borden immediately offered, on behalf of the Dominion, to assume the entire expense of the expedition if the National Geographic Society and the American Museum of Natural History would agree to relinquish their claims. On our cheerfully acceding to Sir Robert's wish, because of our faith in Stefansson and our desire to see his important project adequately undertaken, we received the following very pleasant letter from the Canadian Premier:

PRIME MINISTER'S OFFICE, CANADA.

"OTTAWA, Ont., 21st February, 1913.

"Dear Sir: Mr. Stefansson has shown me your letter of the 11th instant, stating that you are willing to forego your claims to a share in his exploration of the northern waters of Canada, and to cancel the arrangements which you had so generously made to contribute towards the expenses of this undertaking, and I wish to thank you for your courtesy in withdrawing in favor of this Government.

"We are most appreciative of the valuable results obtained by Mr. Stefansson's explorations in the northern part of the American continent, which have given valuable information as to this comparatively unknown portion of the Dominion of Canada, and have to thank you for the part you took in assisting Mr. Stefansson in that work. The Government of Canada feels, however, with regard to the present exploration, that it would be more suitable if the expenses are borne by the Government more immediately interested, and if the expedition sails under the flag of the country which is to be explored. The Government is, however, desirous that the line of investigation begun by Mr. Stefansson and the members of your Association should be continued and would be glad of the scientific co-operation of your members so as to obtain the best results from this expedition. Yours very truly,

(Signed) "R. L. Borden."

"Gilbert H. Grosvenor, Esq.,
"Director and Editor,
"National Geographic Society, Washington, D. C."

While the National Geographic Society waived its claim, this act did not lessen our interest in Stefansson or the admiration with which we followed his five and a half years' contest against obstacles insuperable to any other man. Our expectation of important discoveries by his original methods were realized to such a gratifying extent that on his return the highest honor in the gift of the Society, the Hubbard Gold Medal, previously won by Peary and Amundsen, was unanimously awarded him by the Society's Committee on Research.

Those members who were present when the medal was conferred will not soon forget that memorable meeting of the National Geographic Society, when Stefansson was presented to the members by the two foremost figures in American polar history—Peary, discoverer of the North Pole, and Greely, who had wrested from Great Britain thirty-seven years before (1882) the record for the Farthest North, held by British explorers for 300 years.

Peary had been seriously sick for many months and really should not have risked the fatigue of addressing such a large audience, but in his eagerness to say a kind word of appreciation of his friend—Stefansson—he overrode his physician's orders. The following tribute to Stefansson was Peary's last public address; a few months later his heroic voice was still.

### ADMIRAL PEARY'S LAST PUBLIC APPEARANCE.

"Fellow members of the National Geographic Society:

"To-day we add another to the long list of Polar explorers, both north and south, whom our Society has welcomed and to whom our members have listened with absorbing interest.

"Six years ago, in the parlor of a hotel in Rome, I said good-bye to a confident young friend of mine who was starting then for home in order to begin one of our latest Polar quests. I met him here to-day for the first time since then. How much has happened to him in those six years I need not attempt to relate. Five and one-half years of those six this man has been there in the Arctic regions adding to the sum of the world's knowledge. Five and one-half years!

"It is not my intent to go into a résumé of his work. He is going to tell you that himself, but I can note very briefly that within that time Stefansson has added more than 100,000 square miles to the maps of that region—the greatest single addition made for years in Arctic regions. He has outlined three islands that were entirely unknown before, and his observations in other directions, the delineation of the continental shelf, filling in of unknown gaps in the Arctic archipelago, and his help in summing up our knowledge of those regions are in fact invaluable.

"Stefansson is perhaps the last of the old school, the old régime of Arctic and Antarctic explorers, the worker with the dog and the sledge, among whom he easily holds a place in the first rank. Coming Polar explorers, both north and south, are quite likely to use mechanical means which have sprung into existence within the last few years. According to my own personal impressions—aerial flights; according to Stefansson, he would like to try his chances with a submarine; but whether it be aeroplane or submarine, it will mean the end of the old-time method, with the dog and the sledge and man trudging alongside or behind them.

"What Stefansson stands for is this: he has grasped the meaning of polar work and has pursued his task in the Arctic regions section by section. He has profited by experience piled upon experience until he knows how to face and overcome every problem of the North. His method of work is to take the white man's brains and intelligence and the white man's persistence and will-power into the Arctic and supplement these forces with the woodcraft, or, I should say, polar-craft, of the Eskimo—the ability to live off the land itself, the ability to use every one of the few possibilities of those frozen regions—and concentrate on his work.

"Stefansson has evolved a way to make himself absolutely self-sustaining. He could have lived in the Arctic fifteen and a half years just as easily as five and a half years. By combining great natural, physical and mental ability with hard, practical common sense, he has made an absolute record.

"Stefansson has not only fought and overcome those ever-present contingencies of the Arctic region—cold and hunger, wet and starvation, and all that goes with them—but he has fought and overcome sickness—first, typhoid, then pneumonia, and then pleurisy—up in those forbidding regions, and then has been obliged to go by sled four hundred miles before finding the shelter of a hospital and the care of a physician."

### GENERAL GREELY'S TRIBUTE TO STEFANSSON

Major General Greely then paid the following memorable tribute to the Hubbard Gold Medalist:

"We come together to welcome back Vilhjalmur Stefansson, whose published obituary you have read, but who insists with Mark Twain, that the account of his death has been greatly exaggerated. However, it told indirectly the tale of his dangers and hardships.

"Stefansson has several unique Arctic records. His five and a half years is the world's record for continuous Polar service. A pioneer in living on the game of the region, whether on the ice-covered sea or on the northern lands, he also initiated distant journeys on the ice-floes of an unknown sea, which carried him hundreds of miles from the nearest land.

"The contributions of his expeditions are important and extensive. Besides the natural history and geologic knowledge, he has made inroads into the million square miles of unknown Arctic regions, the largest for many years. His hydrographic work is specially important, in surveys, and in magnetic declinations. His numerous soundings not only outline the continental shelf from Alaska to Prince Patrick Island, but also disclose the submarine mountains and valleys of the bed of Beaufort Sea.

"From the unknown regions of Arctic land and sea he has withdrawn areas amounting to approximately 100,000 square miles. These discoveries comprise about 65,000 square miles of Beaufort Sea to the north of the Mackenzie basin, 10,000 square miles of the Arctic Ocean west of Prince Patrick Island, over 3,000 square miles along the northeast coast of Victoria Island, and over 15,000 square miles of land and sea to the northeast of Prince Patrick Island. In the last-named region three large and other small islands were discovered between latitude 73 degrees and 80.2 degrees north and between longitude 98 degrees west and 115 degrees west.

"These new islands unquestionably fill in the last gap in the hitherto unknown seaward limits of the great Arctic archipelago to the north of the continent of America.

"The spirit as well as the material results of exploration should be recognized. To-night the borderland of the White Sea is in the thoughts and hearts of many, for there, in the gloom of Arctic twilight, and in the cold of a Polar winter, the heroic men of this great nation are enduring fearful hardships and periling their young lives to restore peace and give freedom to unfortunate Russia.

"Recall that in the dawn of that nation's history through this sea and the port of Archangel only could Russia be reached. More than three and a half centuries ago the first great maritime expedition of England sailed to the White Sea, and Chancellor's visit had potent results in the development of both England and Russia.

"Of this great voyage Milton said: 'It was an enterprise almost heroic were it not for gain.' Stefansson's explorations are untainted by motives of materialism.

"In recognition both of the idealistic spirit and of the geographic importance of the discoveries made by Vilhjalmur Stefansson, the Board of Managers of the National Geographic Society unanimously direct me to present to him the Hubbard Medal.

"It is to be added that the three survivors of the so-called Greely International Polar Expedition are too far advanced in years again to hazard Polar work; but as explorers of the nineteenth century who first wrested from England a record held for three hundred years—that of the farthest north—they wish to honor the explorer of the twentieth century who surpasses them.

"Appreciative of Stefansson's endurance of hardships, recognizing his ability in devising new methods, his courage in testing such methods, and his standing as a typical Arctic explorer, the members of the Greely Expedition, who are about to die, salute him."

Thus those redoubtable Arctic heroes, Peary and Greely, paid tribute to Stefansson as a pioneer in a new direction; as one who had supported himself for years, not partially as his predecessors, but *entirely* on the resources of the Arctic regions.

As we read the story of his years in the north, told in this interesting volume with that modesty in achievement which is so characteristic and so endearing in Stefansson, we see the Arctic through Stefansson's eyes, no longer tragic and desolate, but converted by his adaptable spirit and clever creative hand to become fruitful and friendly—comfortable and almost jolly.

# INTRODUCTION

## By Rt. Hon. Sir Robert Laird Borden, P.C., G.C.M.G.,
## *Prime Minister of Canada,*

UNDER WHOM THE EXPEDITION WAS CARRIED OUT.

EARLY in the winter of 1913 Vilhjalmur Stefansson approached the Canadian Government with the view of obtaining assistance for an expedition to the Arctic regions in or adjacent to northern Canada. Support had been promised by the National Geographic Society and the American Museum of Natural History to the extent of fifty thousand dollars, but this was not enough to carry out in full the ambitious scientific and exploratory plans which he had formulated and he needed further support. I told Mr. Stefansson that while the public spirit, sympathy and co-operation of these important institutions were highly appreciated, the Government preferred that Canada should assume entire responsibility for the Expedition, as any lands yet undiscovered in these northern regions should be added to Canadian territory. After obtaining the consent of the two Societies, he accepted my offer to place him in command of the Expedition. By an Order in Council approved on the 22d February, 1913, the general direction was placed under the Department of the Naval Service, and other important departments were directed to co-operate. The history and general results of the Expedition thus organized, extending over a period of more than five years, have been set forth by Mr. Stefansson in this volume.

Those who have read Stefansson's "My Life With the Eskimo" cannot fail to acknowledge its absorbing interest. Even more instructive and illuminating is the story now related. Many preconceived ideas of these great northern territories must disappear forever. Except for the absence of trees, it is not unusual to find within the Arctic Circle landscapes not different in appearance from prairie or meadow. A member of the party was astonished to find a wide expanse of grass land where he had expected to meet an eternal desolation of icy barrenness. Many similar experiences are recorded by Stefansson and by others. Animal life is fairly abundant on many portions of the land and nearly everywhere in the ocean. Birds and insects are in evidence; indeed, certain forms of insect life are so abundant that summer is almost unendurable. It seems paradoxical that in these Arctic regions the season for travel, for exploration and for social enjoyment should begin in mid-autumn and end early in spring. Winter night has no terrors for the Eskimo or for the white man of normal mental balance. The gayest social season among the Eskimos is in the winter months. During the war there was scarcity of fuel both in Europe and on this continent. In a leading London hotel so uncomfortable did I find my sitting-room in December, 1918, that I was constrained to seek a supply of firewood from the Canadian Corps, then working near Windsor. About that time Stefansson and his party, possessing an abundance of fuel, which the country supplied, were sitting in their shirt-sleeves, hundreds of miles within the Arctic Circle, comfortably housed in an edifice which was constructed of snow blocks in less than three hours, and which with greater experience they could subsequently erect in not more than one hour. While we shivered in this temperate zone, there was vast comfort in the vicinity of the North Pole. War conditions necessitated short rations and restriction of diet not only in Europe but in America, while upon the ice floes of the Beaufort Sea abundant food of a healthful character was available without serious difficulty to experienced explorers.

There seems to be much truth in Stefansson's observation that the cold of the Arctic deprives no one of either health or comfort if he understands conditions, realizes necessary precautions, and, making good use of his common sense, governs himself accordingly. But against the heat of tropical regions it is practically impossible to find any reasonable safeguard consistent with ordinary activity. Those accustomed to temperate zones would probably find life within the Arctic Circle more endurable and good health more assured than in the average lowlands at or near the equator. In certain tropical or semi-tropical climates, northern European races last for no more than three generations. There is no reason to believe that a like result would obtain in the far North. Although summer heat is sometimes quite oppressive within the Arctic Circle, its duration is comparatively short.

Among many notable events of the Expedition one distinctive feature has especially impressed me. Before Stefansson, Dr. John Rae in 1848, and David Hanbury at the beginning of the present century, had lived off the country; Nansen and Johansen had lived for a winter on walrus after their sled journey across the sea ice was over; Peary and some others also depended on game to supply part of the food of their crews in winter quarters and to eke out supplies that could be hauled on sledges. Dr. R. M. Anderson and Stefansson, between 1908 and 1912, put Rae's methods to a thorough test and found them effective; they further proved that white men can easily master every art of the Eskimo that is useful for safe and comfortable existence in the Arctic. But the enterprise which began at Martin's Point on the 22d March, 1914, and ended (so far as this aspect is concerned) at Banks Land on the 25th of the following June, was of a character wholly different. The examination of the Beaufort Sea west of Banks and Prince Patrick Islands had been declared by Sir Clements Markham* in his "Life of Admiral McClintock" to be "the great desideratum in Arctic geography." There were reasons for believing that there might be islands in the Beaufort Sea and there were reasons against this hypothesis. In Markham's opinion, knowledge of the Arctic regions would remain very incomplete until this area had been discovered and explored. Stefansson proposed to cross the Beaufort Sea on the ice, depending for food on the animal life which he believed to be existent in that sea. Against his belief all the forces of observation and experience were arrayed. The explorers to whom I have alluded as "living off the country" wholly or in part, had done so on or near land where Eskimos were already living or where Eskimos thought they could live. All of them but Rae used Eskimo hunters to secure part or all of the game used. Stefansson was now striking out into a region where no Eskimo had ever ventured and into which no Eskimo would accompany him unless he carried food, for they believed that no game could be found in that unknown waste. This very region has been referred to by Sir Clements Markham as "The Polar Ocean Without Life." The testimony and experience of Nansen and Peary were quite unfavorable to the hypothesis which Stefansson had formed. Eskimos and whalers were equally strong in the opinion that his venture must be disastrous in any event and fatal if persisted in. Against all this Stefansson placed reliance on deductions founded upon premises that he regarded as unassailable.

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* Markham, himself a distinguished polar explorer, was for many years President of the Royal Geographical Society of Great Britain and was in intimate personal touch with every great polar explorer from Parry to Peary. He was therefore commonly considered a foremost authority on all polar matters.

From the tropics to the Polar circles the amount of animal life per cubic unit of ocean water steadily increases. The great fisheries of the world are in the northern seas. Animal life is abundant not far from the verge of "The Polar Ocean Without Life." Stefansson could not be convinced that its abundance did not extend to that ocean. Against the belief and traditions of the Eskimo, against the universal experience and strong opinion of the most eminent Arctic explorers, against the advice of the whalers, Stefansson maintained his thesis and, risking not only his reputation but his life, committed himself to the ice of the Beaufort Sea. Two companions accompanied him, and there would have been more if necessary, although no Eskimo could be induced to embark upon a venture that he regarded as suicidal. For ninety-six days the leader and his comrades journeyed and drifted. There were a few days of discouragement when the anticipated signs of seal life were not observable, but then came the sure and triumphant vindication of a theory founded upon accurate knowledge, keen observation and sure deduction. Another secret had been wrested from the northern ocean. Stefansson had proved that in the farthest Arctic the sea supplied food even more abundantly than the land. For more than a year the world knew nothing of his success, and it was generally believed (not by those who knew him best), that he had expiated failure by death.

As a result of the Expedition many thousands of square miles have been added to the territory of Canada, much interesting material of great scientific value has been secured, unknown areas of vast extent have been explored and many illusions with respect to Arctic conditions have been dissipated.

Stefansson's anticipations as to settlement and development in these northern regions are interesting. Who would venture to declare that they may not be justified as fully as his confidence in the Beaufort Sea? Men still living can remember that at first the great prairie provinces of Canada were regarded as unfit for human habitation. Once it was firmly held that railways could not be operated in Canada during the winter. Little more than a quarter of a century has elapsed since that theory prevailed with respect to street railways. At times tremendous forces of nature make the Arctic regions terrible and dangerous; but this is true of the ocean upon which hundreds of thousands spend their lives; it is not less true of volcanic mountains within whose shadow great cities have been built and rebuilt. In regions that have been repeatedly desolated by earthquakes, man still makes his habitation.

As a result of the Expedition it is quite possible that the ovibos (or musk ox) may be domesticated. At all events, the attempt should be made. So far as I am aware, no large mammal has been domesticated by man within the historic period.

In "My Life With the Eskimo" and in this volume Stefansson has given us interesting and even fascinating pictures of Eskimo habits, beliefs and traditions before they came into contact with white races. Their social organization, their conception of life, their ideas respecting the phenomena of nature and their practical adaptability to a difficult environment were probably similar to those which prevailed among our very remote ancestors. They spoke several dialects of a remarkably complex language; and in everyday life they used a vocabulary far exceeding that which we ordinarily employ. Through the accumulated experience of successive generations they had acquired habits of life admirably suited to their surroundings. In many respects they were as children; in others, shrewdness itself. For them the age of magic still existed and without difficulty they accounted for the most miraculous or impossible events. Kindness, hospitality and many social virtues adorned their lives. But contact with the white races has been seldom beneficial to any such type. When a primeval civilization comes into contact with ours, the new wine is too strong for the old bottles.

The results accomplished by this Expedition would have been impossible if Stefansson had been a man of less resource and courage. His commanding intellectual powers, remarkable faculty of observation, capacity for keen analysis of facts and conditions, splendid poise and balance, and immense physical strength and endurance made great results possible. Honors have been showered upon him by the representative societies of science; renowned polar explorers have paid him their warmest tribute; great universities have recognized by their highest degrees his contributions to scholarship and to science. The thanks and appreciation of the Canadian Government have been conveyed to him in a Minute of Council. But perhaps his greatest reward lies not in all this but in the love that has grown within him for this great friendly North which still calls him, the recollection of high endeavor successfully achieved, the loyalty and devotion of comrades still present in memory.

Ottawa, October, 1921.

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# THE FRIENDLY ARCTIC

## CHAPTER I

### THE FOUR STAGES IN POLAR EXPLORATION

*This chapter and the next are concerned with fundamental aspects of polar exploration and of the polar regions. They are put here rather than in an appendix because a grasp of general principles should help to make clear many things that might otherwise seem inexplicable in the narrative which follows.*

*Anyone who does not care to be told in advance what polar exploration and the polar regions are like should skip to the beginning of the narrative proper in Chapter III.*

WHEN attempt is made to arrange a large number of facts in diagrammatic order for the sake of easy comprehension, exact truth frequently suffers in the interests of simplicity. This happens when we classify all polar exploration into four stages. Still, the view is more helpful than a conglomerate of facts and details where no philosophic scheme appears.

There are many overlappings; there is occasional retrogression; and in some instances one stage of exploration will survive parallel to another. But, speaking generally, there are four great successive stages.

When in prehistoric times the Scandinavians spread northward in Europe and when the Eskimos and other Mongol-like people moved north in Asia and America to occupy the rich hunting grounds along the polar shores, this was not exploration in the true sense. It would not be exploration in the true sense even if the story were completely known, for these people came so gradually in contact with their new environment that the quest and adventure and heroic endeavor which in our minds are inseparably associated with exploration must then have been lacking. To the explorer, as we think of him, the North seems terrible. But certainly it can have had no terrors for people who gradually occupied the land because they preferred it to other lands farther south. It is true that some historians and even a few anthropologists have assumed that the northern people were crowded into the North by stronger races that pressed upon them from the south. But in modern times close observers of the polar races have found no evidence that they are now or have recently been suffering any pressure from the south, and there is no real ground for the assumption that they ever suffered such pressure. The northern people do not abhor the North. There have been extensive migrations from northern Norway, but these have never been to the tropics; or, if they have been, it has been for special reasons in restricted cases. The northern Norwegian, if he leaves his country, generally finds himself most at home and happiest in some similar climate, such as Manitoba or Alaska, where the winter is as cold as or colder than he ever knew it at home. For one who does not stop to think, it might be a source of wonder that runic stones carved by Scandinavians have been found on the coast of Greenland north of Upernivik at latitudes the attainment of which brought glory to John Davis. But to the man who carved the stone and doubtless traveled far beyond it, the feat probably brought no local renown. His countrymen would find it no more remarkable that he could survive the cold of Greenland than a Zulu finds it that his neighbors can survive the heat of Africa.

Of polar explorers as we know them, in distinction from the people who live contentedly in the North because they understand it, Davis and Hudson are typical. In the first period of polar exploration, men were universally in such fear of the North that they only made furtive incursions into it by ship in summer, returning south before autumn if they could. At that time it was believed that men of our race, softly nurtured in countries like England, either could not survive a polar winter or would find the hardships of doing so quite beyond any reward that could be expected.

In the second stage, of which Edward Parry is typical, the polar winter was still dreadful, but a few men were found of such stern stuff that they were willing to brave its terrors. The battle with frost and storm at that time was a form of trench warfare. The hardy navigator penetrated as far north as might be by ship and then, figuratively speaking, dug himself in and waited for winter to pass, coming out of his hibernation in the spring. In that stage of exploration it was considered an achievement when Parry's men, dragging a cart, were able to cross Melville Island in the early summer, a journey of only a few score miles. Sir John Ross, who, fortunately for the advancement of polar technique, was thrown in close association with the Eskimos, borrowed some Eskimo ideas but used them with the ineptitude of the novice. He employed sledges and made some use of dogs. It seems extraordinary that no explorer thought of going directly to the Eskimos and borrowing their system of life and travel in toto; that instead of learning native methods they found it necessary to discover for themselves the same principles of living and traveling which the Eskimos had discovered centuries before. Sir Leopold McClintock made notable advances over the explorers who had preceded him. Had he matched his ability not with his fellow explorers but with the Eskimos, his strides forward would have been incomparably more rapid. When McClintock commenced his work, a journey of a hundred miles in April or May was considered remarkable and was performed only at the cost of much suffering and hard labor, while at the end of his service, although it covered less than twenty years, journeys of a thousand miles were made without any greater strain upon health or risk to life than had been the case with the hundred-mile journeys.

Yet the fear of the winter was still upon them all. Even McClintock did not commence his great journey from Melville to Prince Patrick Island until April. Although Nares as a lieutenant had the benefit of service with McClintock and Mecham, the expedition which he commanded in 1878 was no advance but actually a relapse into pre-McClintock methods. His statement that a commander should be censured who requires his men to travel in the Arctic before the month of April shows that not only in technique but in mental attitude towards the North he had failed to make any advance beyond McClintock.

Then comes the third stage of polar exploration, of which Peary is typical, a greater step forward, it seems to me, than either of the preceding. The significance of this step can be made clear especially to those not personally familiar with arctic conditions by a truthful analogy. It is a matter of conjecture how the first man navigated a raft and how the first primitive sailor handled his bark. But, however it was and whenever it was, we can take it for granted that the earliest traveler by water paddled fearfully from bay to haven along prehistoric coasts, dreading nothing so much as the gales which could convert the placid surface of the waters he knew how to deal with into tumultuous seas, dangerous and even fatal to his craft and himself. In that time no one thought of the wind as anything but hostile to the mariner. But the time came with the greater development of knowledge when the wind ceased to be hostile and became a friend. Then there was advance after advance until the sailor began to dread the calms which his forerunners had courted, and to pray for the strong breezes that had been to his ancestors things to dread. Finally, the time came when the winds carried clipper ships across the widest oceans, and it became almost inconceivable to the world how commerce could be carried forward without the aid of winds.

As the primitive sailor feared the storm so the early arctic explorer dreaded the winter. This dread gradually became less until there appeared the men who turned winter into a friend as the sailors had done with the gale. The leader among these was Peary, who saw that the cold should not be avoided but courted, and that the most successful journeys could be made in the winter, beginning in January or February, and should come to an end on any properly managed expedition by April, before the first thaw. A calm used to be ideal for paddling, and ideal for that it remains to this day, but paddling is not now a serious occupation. To Peary at work on the polar ice the warmth of summer was as welcome as a calm to Nelson at the hour of battle.

In the first stage of exploration the polar winter was considered so dreadful that it could not be endured; in the second stage it was dreadful, though it could and had to be endured, and no work could be done till it was nearly over; in the third stage it was not only neither dreadful nor difficult to endure, but was the season when work could be done most easily, and was therefore preferable to summer. Apparently the limit of progress had been attained in this direction. But just as steam altered navigation and brought back the time when a calm is more agreeable and valuable than a strong breeze, so there was possible in arctic exploration an advance which would again bring summer into a degree of favor, although it did not discard use of the winter cold as steam navigation has discarded use of the wind.

Explorers of the Peary type might no longer dread the winter, but there was another arctic condition which to them was still full of menace. Though traveling could be done and had to be done in winter, it was laborious, fraught with hardships, and had to be limited because of the difficulty of transporting enough food for men and dogs. It was universally conceived that an ice-covered arctic sea could supply neither suitable food nor suitable fuel in adequate quantity for the support of traveling parties. For centuries Eskimos had been known to subsist on the shores of the polar sea, but it was believed that this was existing rather than living, and that the people were different, although enough like us to be as wretched as we believed we would have been under arctic temperature, arctic night, scarce and undesirable food, and other difficult living conditions. Now and then a traveler had come forward with reverse testimony that the Eskimos were healthy and happy, and that life by their method was as comfortable in the Arctic when you once become used to it as the life of a primitive tropical people was when you become used to that.

The Eskimos themselves considered it impossible to make a living by their method anywhere except on land or on the ocean near land. The explorers all fell in with this view and so did geographers and others who theorized about it. Sir Clements Markham, himself an arctic explorer and over a long lifetime in close touch with polar progress, toward the end of his career in his "Life of Sir Leopold McClintock," speaks of "the polar ocean without life" (page 166), and at various times in other places referred to the "fact" that, while people could subsist on certain arctic lands, subsistence on the high sea was not possible. Similarly Nansen on his great journey over the ice after leaving the *Fram* killed his dogs one by one, feeding the dead to the living, because he did not conceive it possible to secure food for them. Even Peary, though he did not usually deliberately plan to kill his dogs, says in his last book, "The North Pole," that he expected to drive them so hard and feed them so little that sixty per cent. of them would die on the journey.

But it is obvious that were this opinion of the Eskimos and the explorers wrong, then a further advance in the method of polar exploration was still possible, and without the aid of new mechanical invention. The men of early time had shown that travel on the ice is possible in summer, although difficult and disagreeable. The men of the Peary stage had shown that traveling on the sea ice in winter is far easier and more agreeable than traveling in summer and that the only limitation to the length of journey was through the difficulty of transporting enough food. Now if it could be demonstrated that food suitable to sustain indefinitely both men and dogs could be secured anywhere on the polar sea, then obviously journeys over the ice would cease to be limited either in time or distance. Any part of the polar sea would then become accessible to whoever was willing to undergo the supposed hardships of living on meat exclusively, using nothing but blubber for fuel, and remaining separated from other human beings than his own traveling companions for a period of years.

To demonstrate the feasibility of this and thereby to bring in the fourth stage of polar exploration, was the main task of our expedition. From my point of view, at least, any discoveries which might be made through the application of this method were secondary to the establishment of the method itself. For, with the method once established, anyone could go out and make the discoveries. When the world was once known to be round, there was no difficulty in finding many navigators to sail around it. When the polar regions are once understood to be friendly and fruitful, men will quickly and easily penetrate their deepest recesses.

I am one of those who, knowing both Peary and his methods, never had any doubt that he reached the North Pole on April 6, 1909. I have, however, been sometimes impatient of discussion as to whether he reached it or not. The all-important consideration is that he developed a method by which anyone could reach the Pole or any other point no farther removed from the nearest land than five or six hundred miles, which he thought (and I agree) was about the limit as to distance of the dog-sledge system of transportation.

If you once concede that the Wright brothers invented the aeroplane and inaugurated the era of air navigation which is now revolutionizing our civilization, both in peace and in war, then it becomes of little interest whether Orville Wright can fly as high or as far or steer an aeroplane as successfully as some one else. Those are accomplishments by no means small, but not in a class with the pioneer work that made all the rest possible. When Peary was able to reach the Pole he laid down a system by which anyone of good health, sound judgment and a reasonable apprenticeship in polar work can reach it, starting from the same base on the north coast of Grant Land. With that point understood, any attempted disparagement of Peary by suggesting that he was himself too old to get to the Pole (a foolish suggestion, anyway) would be like trying to cast slurs on Watt or Stephenson by pointing out that neither of them drove a locomotive at a hundred miles per hour.

# CHAPTER II

## THE NORTH THAT NEVER WAS

THE salient characteristics of the arctic regions are only too well known. With minor modifications, they are as follows: The Arctic is a roughly circular or exactly circular area "at the top of the world," with the Pole for a center. The Pole is the point on the northern hemisphere most difficult of all places to get to. Formerly explorers went north to find a short route from Europe to China or in search of gold; but later they strove and still are striving for the Pole itself. The Northwest Passage was found by the Franklin Expedition in the middle of the nineteenth century (some think it was found by Amundsen in 1905), and the Pole was attained by Peary in 1909. The Northwest Passage has proved of no immediate commercial value and will therefore forever remain worthless. The Pole has been attained, and the supreme achievement of the Arctic thus made a finality.

Why should any one want to explore the Arctic further? The land up there is all covered with eternal ice; there is everlasting winter with intense cold; and the corollary of the everlastingness of the winter is the absence of summer and the lack of vegetation. The country, whether land or sea, is a lifeless waste of eternal silence. The stars look down with a cruel glitter, and the depressing effect of the winter darkness upon the spirit of man is heavy beyond words. On the fringes of this desolation live the Eskimos, the filthiest and most benighted people on earth, pushed there by more powerful nations farther south, and eking out a miserable existence amidst hardship.

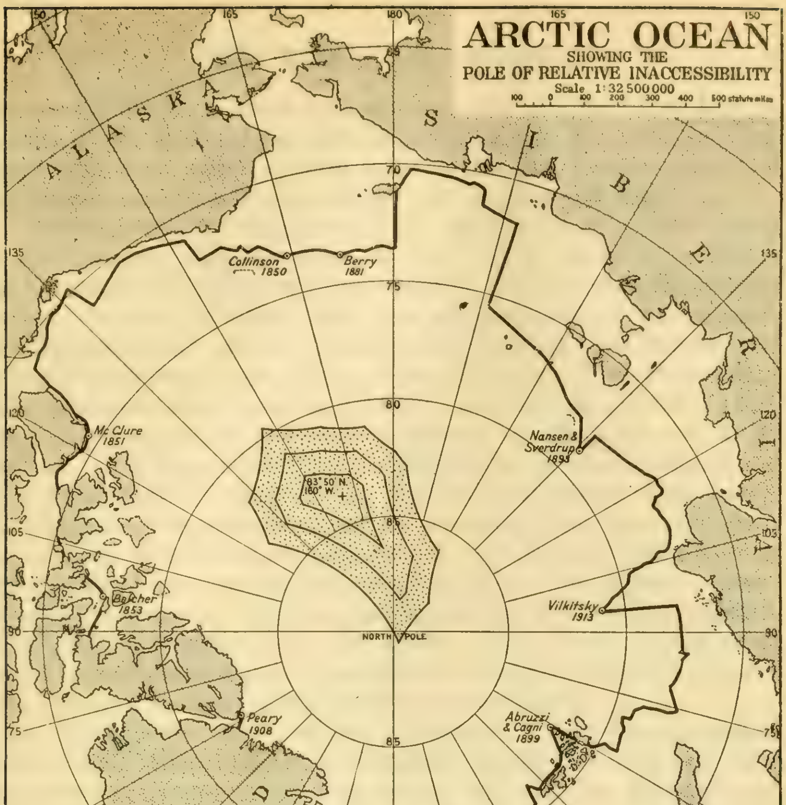
This, with individual modifications, is the current picture of the Arctic, and this is substantially what we have to unlearn before we can read in a true light any story of arctic exploration.

According to their varied temperaments, those who hold such views of the North are forced to one or another semi-irrational explanation of why explorers still go there. Some think it is because of an insatiable desire, mysteriously implanted in our race, to throw ourselves against obstacles, to brave dangers and suffer heroic deaths—a sort of human counterpart of the impulse which leads the lemming to march in thousands into the ocean to be drowned. Other conceptions vary upward and upward, until we come to the noble view that the explorer is the scientist urged by a thirst for knowledge, who struggles on through the arctic night with the same spirit that keeps the astronomer at his telescope, neither of them thinking of material profit or necessarily of glory or even of the approbation of his fellows.

There is much of the adventurer in some explorers and much of the scientist in others; in a few the qualities are happily blended. But in order to understand the Arctic explorer and his work we must understand the Arctic as it really is. It might seem that the easiest way to do this would be to learn more about it. A far easier way is to forget what we think we already know.

The Arctic as pictured in the first two paragraphs of this chapter and in the minds of most of our contemporaries, does not exist. It may be a pity to destroy the illusion, for the world is getting daily poorer in romance. Elves and fairies no longer dance in the woods, and it appears a sort of vandalism to destroy the glamorous and heroic North by too intimate knowledge, as the Greeks drove their gods off Olympus through the perverse scaling of the mountain to its top.

Our first close look at the Arctic shows us that our central "fact," the preëminent inaccessibility of the Pole, is not a fact at all. The portion difficult of access is not circular with the Pole at its center, but of a highly irregular shape with the Pole lying well towards one of the edges. The region in the north difficult of access is an ocean more or less covered with ice. The inaccessibility of any part of this area is due to the fact that there is too much ice for ships to sail as they sail on the Atlantic, and not enough for men to walk safely and easily as they walk on land. There is no single huge expanse of level ice: there are instead innumerable floes or cakes of ice. These are pressed against each other under the stress of wind and current, their edges crumble under the terrific strain, and ice pressure ridges are formed resembling mountain ranges in contour, though seldom more than fifty or sixty feet in height. If the floes are extensive they break up under heavy pressure not only along their edges but at various points within the general field, buckling till they crack and forming new floe edges with new pressure ridges. Then when the strains slacken or become unequal the floes, instead of hugging each other, spread apart with water lanes between. This happens even in midwinter with the temperature at



THE GEOGR. REVIEW, SEPT. 1920

The entire area outside of the heavy solid line may be called the "Zone of Approach by Ship"; the area within it the "Zone of Man-and-Dog Travel." The stippled portion of the latter is the "Zone of Comparative Inaccessibility." The distance between the isochronic lines is five days' dog-sledge travel, or 60 miles. Incidentally the map shows the superiority of Peary's position of 1908 over all others on land as a base for a dash aimed at the point of latitude 90° N. It is also favorably situated for an attack on the "Pole of Inaccessibility," which is only 200 miles farther away from Peary's base than the North Pole.

its lowest. There is never a time when one can travel on foot or by dog sledge over the ice without meeting this handicap of open water, and open water is more serious than the deepest masses of the softest snow or the most craggy and slippery ice ridges.

All this being so, the North Pole might still be at the center of this floating conglomeration of ice. So it would were it not for a fundamental difference between the Atlantic and the Pacific oceans. In each of these there is a great stream of warm water rushing northward. In the Atlantic we call it the Gulf Stream and in the Pacific we speak of the Japan Current. The two oceans differ fundamentally, however, in that, no matter how hard it tries, the Japan Current is unable to penetrate to the polar sea in its quarter. It is fenced out by the chain of the Aleutian Islands and by Bering Strait, where Alaska and Siberia almost lock horns. The Strait is thirty-six miles across, scarcely wider than the channel between Great Britain and France, and besides being narrow and shallow it has two islands in the middle. The Japan Current, therefore, instead of reaching the Alaskan arctic with its warmth, spends its heat upon the air and water of the North Pacific, with only a little and practically imperceptible amount of slightly warmed water finding its way to the north coast of Alaska.

In the Atlantic the condition is different. The waters warmed by the Gulf Stream spread northward through the wide and deep gap between Norway and Greenland, splitting on Iceland with such effect that although Iceland is arctic in name and subarctic in latitude it is temperate in weather. The climate of Iceland at sea level does not differ materially from that of Scotland. There are high mountains and these are ice-capped. It is a commonplace of geology that the Scotch mountains would also be ice-capped were they as high as those of Iceland. At sea level in Iceland the temperature in some winters never falls to zero Fahrenheit, and fifteen below is more often experienced in the region near New York City than in Reykjavik, the capital of Iceland. For the last ten years the mean temperature of January in Reykjavik has been thirty-three degrees above zero, or about that of Milan in Italy. Nor does the Gulf Stream stop at Iceland. Its waters creep north into the polar ocean and melt away the ice that otherwise would be there, so that the Scotch whalers in an ordinary season can sail from six to seven hundred miles closer to the Pole on the Atlantic side than the American whalers on the Pacific side.

There is another place where a ship can steam about as close to the Pole as it can through the breach made by the Gulf Stream.

This is the passage which Peary has called the "American route to the Pole," the narrow series of straits between Greenland and Ellesmere Land. There is frequently a current running south through this strait. The huge masses of ice from the polar ocean to the north would like to accompany this current south into the strait, but in their eagerness they crowd each other in its northern mouth, like a mob of people jammed in the narrow exit of a building. While the ice cakes on the surface are jammed and only some fragments get through, the water underneath them flows south freely, so that in many seasons those straits are blue water in late summer, though the latitude is higher than that which ships can navigate anywhere else. It was through this circumstance that Peary was able to get a ship up the north coast of Grant Land, less than five hundred miles from the Pole.

It is a commonplace of arctic lore and indeed self-evident that so long as sledges hauled by dogs, men or motors are used for arctic exploration, that point will be most difficult to reach which is farthest away from the ultimate goal of a ship where the sledge traveling has to begin. If this ultimate ship base is 450 miles from the Pole in Grant Land, or Franz Josef Land, about 800 miles at Cape Chelyuskin on the north tip of Siberia, and over 1,100 miles near Point Barrow on the north tip of Alaska, it becomes evident that the point in the Arctic hardest to get at, which we may call the "Pole of Inaccessibility," by no means coincides with the North Pole but lies about four hundred miles away from it in the direction towards Alaska. This coincided roughly with the center of the unexplored area in the polar regions when we sailed north, an area of over a million square miles then, and still to be reckoned as at least seven hundred thousand square miles. The region is unexplored, partly through its inherent inaccessibility, but partly also for two other reasons.

The first of these reasons is that the civilization of our time has developed on the two shores of the Atlantic, and that the sailors of this ocean have been the chief explorers of the North. It was natural they should attack the problem along the frontier nearest home, and that is one reason why knowledge has advanced into the inaccessible area more rapidly from the Atlantic than from the Pacific side. Incidentally, those who went north with a desire to find a way from their homes to the Indies naturally struck into the unexplored area on a promising route to attain this purpose, which again was the frontier nearest home.

But a second reason has been the glamour of the search for the

Pole. Even when you realize that it is comparatively easy of access, it is still ninety degrees away from the equator, and unique. The sentiment surrounding the idea of uniqueness might have been weakened had people realized that as a known mathematical point the North Pole was obliged to be comparatively accessible. But that bit of knowledge has succeeded in maintaining itself as the exclusive property of a few specialists, and the world in general has imagined the North Pole to be to the Arctic what the mountain top is to the mountain. That analogy is true when applied to the Pole of Inaccessibility but not when applied to the geographic North Pole. But false views when strongly held are as powerful in their effect upon human conduct as any true views can be, and this has been another reason why men brought up on the shores of the Atlantic have striven into the polar area with the latitude of 90° North as their goal, but with the practical result of progressively uncovering vast areas that lay between.

In the process of removing the imaginary Arctic from our minds, we come to the proposition that all land in the far north is covered with eternal ice.

Permanent ice on land is another name for a glacier. When we stop to think of it, glaciers exist in any part of the world with the proper combination of high altitude and heavy precipitation. Mount Kenia in Africa, the top of which is considered to be about seven miles from the equator, has "eternal ice" upon it, a glacier of considerable area. There are known to be huge glaciers in subtropical Asia and lesser ones in South America. They are eternal on the mountain-tops of Mexico; in California they come a little nearer sea level, as they do in Switzerland. They come lower yet in the State of Washington, not primarily because it is farther north but chiefly because of the heavier precipitation. British Columbia is the warmest province in all Canada, and yet it contains three-quarters of all the glaciers of continental Canada, again because of the heavy precipitation. The south coast of Alaska has a climate not very different from that of British Columbia or of Scotland, though somewhat more rainy than Scotland. A comparatively warm country, southern Alaska contains huge glaciers which in some instances reach to the ocean and break off, forming icebergs that float away to be rapidly melted by the warm waters of the Pacific. But if you travel seven or eight hundred miles overland from the glacier-infested south coast northward you come to the prairies bordering the Alaskan north coast. Here is a comparatively cold climate; but on the great triangular coastal plain of fifty thousand square miles there are no mountains, consequently no glaciers. Geologists tell us that a few millenniums ago there was a sheet of ice covering England in Europe and New England in America. At that time what are now the cities of New York and London were covered by an ice sheet, but there was no ice sheet covering the low plains of northern Alaska, and there never has been since.* The explanation is that northern Alaska is low, flat land with a precipitation so light that the snow which falls in winter is all thawed away in the spring.

These being the facts, it seems strange at first that people should so universally have the idea that the lands of the far north are covered with glaciers. The explanation is simple. There is one land in the north that is covered with glaciers and from it all the rest of the north has been pictured by analogy. Greenland is a mass of high mountains in a region of precipitation so heavy that the heat of summer does not suffice to thaw all the accumulated snows of winter, so they change into glacier ice that flows down the valleys into the sea and breaks off into the icebergs that are the delight and dread of the transatlantic tourist. We thus have in fact as well as in the hymn-book "Greenland's icy mountains." And Greenland is close to the big modern centers of population. In the days before Standard Oil became the light of the world the whale and seal fisheries were profitable, and men from nearly every seaboard town were engaged in them. They brought home stories of the ice of Greenland and some of them wrote books about it. In more recent years about every other owner of a yacht has more or less timorously approached Greenland, near enough at least to see the ice and to talk and write about it. And because Greenland has been truthfully described as a land mainly ice-covered, we have thoughtlessly assumed that all northern lands are similarly ice-covered. Some glaciers, although much smaller, exist in Franz Josef Land and in Spitsbergen, and there are glaciers of considerable size in Ellesmere and Axel Heiberg Islands, and lesser ones in Baffin Island. But when you get west of that, the great archipelago that stretches northward from Canada towards the Pole is quite free of them and so is all the Canadian mainland along the polar sea and southward to the arctic circle and beyond, except for some high valleys and peaks in the Rockies.

But even after making it clear that Greenland is a peculiar island and the only one having an ice cap, and after explaining further that the glaciers of Baffin Island are comparable in size to the glaciers of British Columbia, we may meet the objection, "But surely the land is covered with snow all summer." This, of course, cannot be the case. If it were, a glacier would gradually develop. As a matter of fact, the snowfall in the Canadian arctic islands and on the north coast of Canada and Alaska is less than half and in many places less than quarter of what it is, for instance, in Montreal or Petrograd or the hills back of Christiania. It is less than in Chicago, Warsaw, northeast Germany or the Highlands of Scotland. The amount is difficult to estimate exactly for the snow is so frequently disturbed by the wind, but in all probability the typical arctic snowfall would not, if translated into water, amount to more than four or at the most six inches per year, where the snowfall in certain inhabited portions of Europe and America amounts to ten times that much. Sverdrup estimates the total annual snowfall of Ellesmere Island, the most northerly island yet found in the world, at about one-tenth of the weather bureau estimate for the annual snowfall of St. Louis, Missouri. Most of what little snow falls in the far North is soon swept by the wind into gullies and into the lee of hills, so that from seventy-five to ninety per cent. of the surface of arctic land is comparatively free from snow at all seasons. What we mean by "comparatively free" is that a pebble the size of a plum lying on the ground would have more than an even chance of being partly visible above the snow.

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* See "Canning River Region of Northern Alaska," by Ernest de Koven Leffingwell, published by the U. S. Geological Survey, 1919.

Closely allied to the idea that all land in the north is covered with eternal ice and snow is the one that the climate is an everlasting winter of intense cold. Whether this is true is largely a matter of definition. A person brought up in Manitoba or Montana would be inclined to think that there is no winter in the south of England, while a native of Sicily or India might consider the climate of England all winter. We might begin by defining summer, and defining it as that season when ponds are unfrozen and the small rivers flow ice-free to the sea. This season may be five months long, as it is on the arctic circle north of Great Bear Lake in Canada; four months, as in Victoria Island; three months, as in Melville Island; or even shorter, as in the islands discovered by us to the north. But there is always a summer, the presence of birds, with the hum of bees and the buzz of insects more unpleasant and with green grass and flowers.

The question of whether the arctic winter is intensely cold is also a matter of definition. Temperature is a field where everything is comparative, even though you concede to the thermometric scale an absolute value. The Canadian government has for more than twenty years maintained a weather observatory at Herschel Island on the north coast of Canada, about two hundred miles beyond the arctic circle, and during that time the lowest temperature recorded has been 54° below zero Fahrenheit. This may seem cold, and indeed is cold in comparison with Zululand or England. But it is not cold when compared with certain permanently inhabited countries. Traveling south from Herschel Island less than two hundred miles you come to Fort Macpherson, for a long time the most northerly trading post of the Hudson's Bay Company, and here the temperature some winters drops as low as 68° below zero. This is because, although going south, you are getting away from the moderating effect of the huge amount of unfrozen and comparatively warm water that underlies the ice of the polar sea and that forms a great radiator which prevents the temperature from dropping exceedingly low. Traveling again south from Fort Macpherson several hundred miles you come to the city of Dawson, the capital of the Yukon Territory. This is a great mining center, although it no longer has a population of forty thousand people as in the days of its highest prosperity. Dawson is an ordinary town with buildings steam-heated and electrically lighted, and with all the ordinary activities of a place of four or five thousand population. There are shops where people buy and sell as they do in other climes, there are churches with people going to church (a few), and there are little children toddling to school, all without any greater apparent discomfort, though the temperature sometimes drops to 65° below zero, than you find in France or in North Carolina where the temperature goes a little below freezing. More hardship is felt, more complaint expressed, and there is more interference with the ordinary routine of life when snow falls in Paris than when Dawson is at its coldest.

As you go south along the Rocky Mountains from Dawson you get farther from the great temperature equalizer, the ocean, as you get nearer the equator. A thousand miles south, in northern Montana, the United States Weather Bureau gives the same minimum figure for winter cold near Havre that the Canadian Weather Bureau does near Dawson—68° below zero. We know from observation it is never colder than 54° below zero on the north coast of North America at sea level: we know theoretically that it cannot ever get much colder than 60° below at the North Pole which lies in a deep ocean. It is, then, at Havre, Montana, fourteen degrees colder than on the north coast of North America and ten degrees colder than at the North Pole. Near the great city of Winnipeg in Manitoba the weather bureau shows lower temperatures than for the north coast of Canada. So if you happen to be living in northern Montana or southern Manitoba and want to go polar exploring, it would seem you might leave behind a few clothes. I once said substantially this in a lecture in Kalispell, Montana, whereupon some one in the audience took me to task for running down Montana. But the merits of Montana are securely established, I told him. A friend of mine has a cattle ranch near Havre where steers do well running out all winter. I was not, therefore, running down Montana by the comparison but praising the North Pole.

The cold pole of the northern hemisphere, far from coinciding with the North Pole, is believed to be on the continent of Asia north of Irkutsk, where the temperature is said occasionally to fall to 90° below zero. And that is a settled country, the inhabitants of which probably do not complain any more about the climate than do those of London or New York.

A corollary to everlasting cold in the north is absence of summer heat. It is not easy to say which one of the common notions about the North is the least true, but it is hard to see how any idea can be more wrong than this one.

I spent the summer of 1910 from fifty to seventy-five miles north of the arctic circle in Canada, northeast of Great Bear Lake, and for six weeks the temperature rose to the vicinity of 90° in the shade nearly every day. Neither did it fall low at night, for in that region the sun does not set and there is no respite through the cooling darkness. The sun beat down on us from a cloudless sky as it continued its monotonous circling, and all of my party agreed we had never in our experience suffered as much from cold as we suffered from heat that summer. The distress was augmented by the unbelievable numbers of pests of the insect world—mosquitoes, sandflies, horseflies, and so on. No one who has not been in the Arctic, or near it, has any idea what mosquitoes may be like. I have found it wise not to even try to explain, for although people are willing to believe any horror of the North if it centers around cold and ice, they lose faith in your responsibility if you try to tell them the truth about the northern mosquito.*

Every summer the United States Weather Bureau reports temperature above 90° in the shade at Fort Yukon, in Alaska, four miles north of the arctic circle. The maximum recorded there so far is 100° in the shade.

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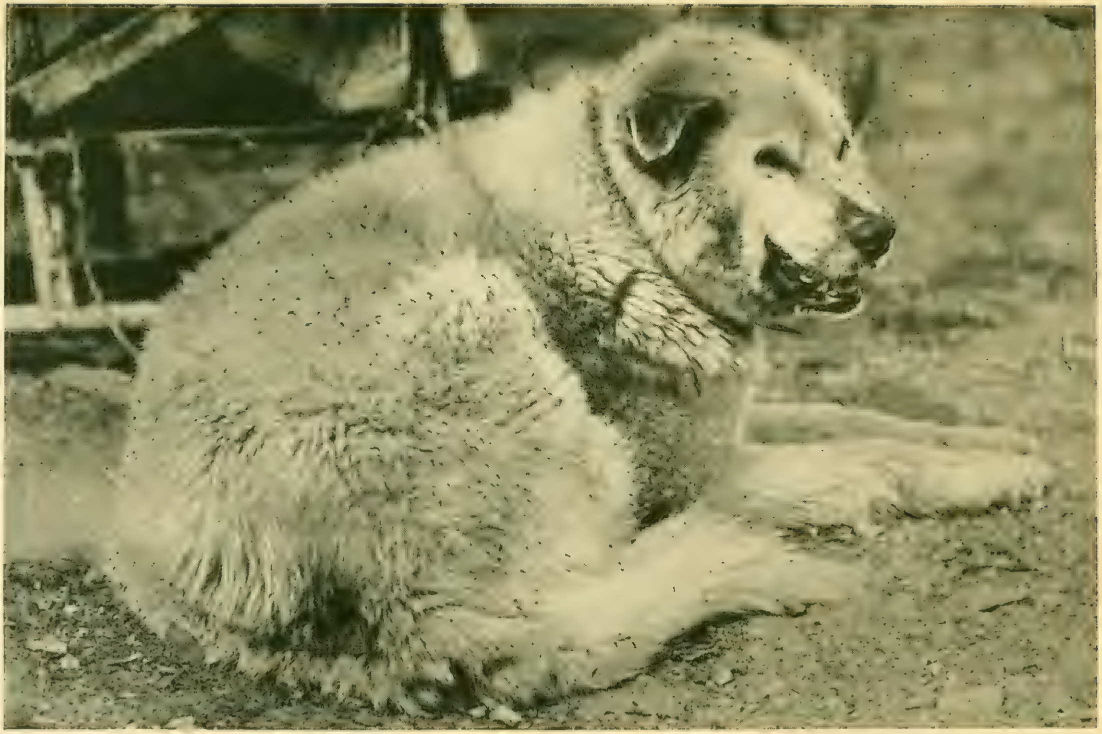
*See "The Arctic Prairies," by Ernest Thompson Seton, p. 63.

Still following the typical view of the far north we come to the question of vegetation. Even those who would make the offhand statement that the land is covered with eternal ice and snow would, if you pressed them, admit that they had heard of vegetation in the North. You would, however, find that in their minds the idea of vegetation was coupled with such adjectives as "humble," "stunted," "clinging," and more specifically they would be of opinion that what vegetation there is must be mosses and lichens. Should you succeed in reminding them that they have read or heard of arctic flowers, they would think of these as an exception.

Yet Sir Clements Markham in his appendix to the "Life of Admiral McClintock," points out that he knows of the existence of 762 species of arctic flowering plants and only 332 species of mosses, 250 of lichens and 28 of ferns. Similarly Dr. Elmer Ekblaw, the American botanist, gathered over 120 different species of flowering plants in one vicinity six or seven hundred miles north of the arctic circle. And these are not flowering plants that are strange to us, but they include such common forms as saxifrage, poppy, Alpine chickweed, bluegrass, heather, mountain avens, sedge, arnica, cat's-paw, reed-bent grass, blue-bell, sixteen species of cress, dandelion, timothy, scouring rushes, ferns and edible mushrooms.

Even while we realize that the number of species of flowering plants in the Arctic is far greater than the non-flowering, we might still believe that the non-flowering are comparatively luxuriant and conspicuous and the flowering plants shrinking and rare. In general this is the opposite of the truth. In special cases it may be that, through scarcity or absence of soil, lichens and mosses prevail locally, for the peculiarity of lichens especially is that they manage to live even on the surface of naked rocks. But whenever soil is abundant, and this is as likely to be the case in the Arctic as elsewhere, the prevailing vegetation is grasses, sedges and the like; and in some places, no matter how far north, this kind of vegetation completely obscures the non-flowering.

"Barren Ground" is a libelous name by which the open land of the north is commonly described. This name is better adapted for creating the impression that those who travel in the North are intrepid adventurers than it is for conveying to the reader a true picture of the country. If we want to be near the truth we should



ON THE COPPERMINE RIVER IN 1910 THE MOSQUITOES BIT OUR DOGS AROUND THE EYES TILL THE EYES SWELLED CLOSED, MAKING THEM TEMPORARILY BLIND.

1. There are hundreds of species of flowering plants and dozens of species of moths and butterflies found on the most northerly islands in the world.
2. A meadow and flowers of the cotton plant—Herschel Island, North Coast of Canada.

rather follow Ernest Thompson Seton who is so impressed with the grasslands of the North that he makes the expression "The Arctic Prairies" the title of his book describing a journey north. Mecham, one of the most remarkable of arctic travelers and the original explorer of southwestern Melville Island and southern Prince Patrick Island, says in his report, published in the Parliamentary Blue Books of Great Britain for the year 1855, that many of the portions of Melville Island which did not happen to be rocky reminded him of English meadows. This was five hundred miles north of the arctic circle and this is the case no matter how far north you go. Northern Greenland is not only the most northerly land so far discovered but the refrigerating effect of the ice in the sea is there greatly accentuated by the chill from the inland icecap. Here, descending from the inland ice to the coast, Peary found musk oxen grazing in green and flowered meadows among the song of birds and the hum of bees. That the musk ox is a grass-eating animal and not a lichen-eater, and is the most northerly land animal known, sharing that distinction equally with the caribou, shows that grass must be abundant on the most northerly lands.

We now come to the remarkable adjective "lifeless," so frequently applied to the North. What has been already said is an indirect comment on this, but we may develop it further. Look in any work of oceanography, and you will find the statement that in the ocean the amount of animal life per cubic unit of volume does not decrease as you go north from the equator. To this it is of course possible to reply, "Oh, yes, but when we call the arctic lifeless we are not thinking of the depths of the sea but of the surface of the land." If that is the position taken, it differs diametrically from that of such a polar authority, as, for instance, Sir Clements Markham, a former president of the Royal Geographical Society of Great Britain, who on page 166 of his "Life of Admiral McClintock" speaks of the "polar ocean without life" in contradistinction to the polar islands, which he recognized to be well supplied with it.

The arctic grasslands have caribou in herds of tens of thousands and sometimes hundreds of thousands to a single band, with lesser numbers of musk oxen here and there. Wolves that feed on the caribou go singly and in packs of ten or less, and their aggregate numbers on the arctic prairies of the two hemispheres must be well in the tens of thousands. There are the polar foxes, both white and blue, that feed in summer on the unbelievable swarms of lemmings that also form the food of hundreds of thousands of owls and hawks and gulls. There are the goose and brant and swan and crane and loon and various species of ducks. The ground at the moulting season in some islands such as Banks Island, three or four hundred miles north of the arctic circle, is literally white with millions of wavy geese and equally white with their moulted feathers a little later in the season when the birds are gone. When you add to this picture the bumblebees, blue-bottle flies and abundant insect life of which the clouds of mosquitoes form the most impressive and least tolerable part, you get a picture of a country that in summer certainly is not without life.

"But then," it may be said, "there comes the winter when the insects live only as eggs and larvæ containing the potential life for the coming year, and when all land animals migrate south." It is true that this opinion can be supported by direct quotations from explorers, especially the early ones. It seemed so eminently reasonable to men brought up in England that any animal with legs to walk on would move south in winter, that they translated this belief into a statement of fact and asserted that both the caribou and the musk ox leave such islands as Melville in the fall to come again in the spring. If this were so, surely my companions and I could not have lived on the meat of land animals which we killed every month of the year as far north as 76° and even 80° N. Latitude. Musk oxen never leave any island on which they are born, for there is no evidence that they go out on the sea ice at all. Caribou do move about from island to island but they are just as likely to move north in the fall as to move south. On the north end of Banks Island McClure found them abundant in midwinter seventy years ago, and we found them more abundant in the north end of the island than anywhere else every winter while we lived there. The bull caribou shed their horns about the middle of winter, and even the summer traveler cannot fail to notice that the horns of bull caribou are scattered over every arctic island that he visits.

No more than the caribou and musk oxen do the wolves that feed on them go south. The white foxes leave the islands and the mainland, ninety per cent. of them, but they go north rather than south. What they really do is to leave the land for the sea ice, where they subsist through the winter on remnants of seals that have been killed and not completely devoured by the polar bears. The lemmings stay in the north. Most owls and most ravens go south but some spend the winter north. Fully half the ptarmigan remain north of the arctic circle. The hares live in winter about where they do in summer.

To sum up, the arctic sea is lifeless except that it contains about as much life to the cubic mile of water as any other sea. The arctic land is lifeless except for millions of caribou and of foxes, tens of thousands of wolves and of musk oxen, thousands of polar bears, billions of insects and millions of birds. And all these go south in the fall except the insects which die as they do in temperate lands, and except the ptarmigan, caribou, foxes, wolves, musk oxen, polar bears, lemmings, hares, weasels, owls, and ravens, all of which we have named in approximately the order of their decreasing numerical strength.*

Then there is the "silent north." Nothing is more characteristic of the Arctic as it has been imagined to be than its silence. But it will appear just how silent a summer must be where the air is continually filled with the hum of the blue-bottle fly, ubiquitously waiting to deposit its larvæ, and the buzz of the mosquitoes, hovering in clouds to suck the blood of man or beast. There are the characteristic cries of the plovers and the snipes and the various sandpipers and smaller birds, the squawking of ducks, the cackling of geese, and the louder though rarer cries of the crane and the swan. And especially the night is resonant (if you are "of a nervous temperament" you will say hideous) with the screaming of loons, in its nature somewhere between the shriek of a demented woman and the yowling of cats on a back fence.

Two characteristic noises of southern lands are absent. There is not the rustle of leaves nor the roar of traffic. Nor is there the beating of waves upon a shore except in summer. But none of these sounds are heard upon the more southerly prairies. The treeless plains of Dakota when I was a boy were far more silent than ever the Arctic has been in my experience. In both places I have heard the whistling of the wind and the howl of wolves and the sharp bark of the fox at night; in both places I have heard the ground crack with the frost of winter like the report of a rifle, although these sounds are more characteristic of the Arctic. In the far North not only is the ground continually cracking when the temperature is changing and especially when it is dropping, but near the sea at least there is, not always but on occasion, a continuous and to those in exposed situations a terrifying noise. When the ice is being piled against a polar coast there is a high-pitched screeching as one cake slides over the other, like the thousand-times magnified creaking of a rusty hinge. There is the crashing when cakes as big as a church wall, after being tilted on edge, finally pass beyond their equilibrium and topple down upon the ice; and when extensive floes, perhaps six or more feet in thickness, gradually bend under the resistless pressure of the pack until they buckle up and snap, there is a groaning as of supergiants in torment and a booming which at a distance of a mile or two sounds like a cannonade.

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* On the arctic prairies of the mainland there remain for the winter also the muskrat and the grizzly bear. Of the sea life only whales and walruses are known to go south.

"The eternal polar silence," writes the poet in his London attic. But Shackleton's men, as quoted in his book "South," now and again commence their diary entries with the words "din, *Din, DIN.*" Robert Service some distance south of the arctic circle in a small house in the city of Dawson, wrote much of the arctic silence. But we of the far north never forget the boom and screech and roar of the polar pack.

The literary north is barren, dismal and desolate. Here we are dealing with words of indefinite meaning into which each of us reads what significance he chooses.

Part of my bringing up was on the level and treeless Dakota prairie where I heard daily plaints from my mother expressed in one or another and sometimes in all of these adjectives. She had been brought up within sight of magnificent snow-capped mountains with deep purples and blues in the folds of the hills, and what she was really complaining about was that the prairies had no mountains in the distance. They were also treeless, but so had been my mother's mountain home, and she had no longing for trees and even almost a dislike for them. I heard the same complaints of the dreariness and desolation of the prairie from our neighbors. They, like us, were newcomers, but from a country of forest and hill. No doubt they had read much of the beauty of the mountains and were willing to concede it in the abstract, but what they were lonesome for was the shade and the rustle of trees and the relief to the eye of hedgerows and orchards. To my mother desolation meant absence of mountains; to them it meant absence of trees; but to me, brought up on the prairie, the desolation was not perceived and the complaints were cries without meaning. When I later moved to a country of hills and woods I had a feeling of being restrained, shut in. A mountain on the horizon does not trouble me. But even to this day when I get close in among them my most pronounced feeling is that they shut out the view. No matter how high the peak that you climb, there are all around other peaks, each with its secret behind it. No landscape is open, free, fair and aboveboard but the level prairie or the wide-stretching sea.

Few of the explorers of the far north have come from a mountainous country but most of them have been brought up among hills and woods. So what they mean when they call the north barren is that it is devoid of trees, and when they say desolation they mean absence of cultivation and habitations of men in the sense in which they are familiar with them. Two stories on one subject illustrate this completely and give, I believe, the whole truth of why we have so often been told that the north is barren and desolate.

A young man by the name of Thomas Simpson had come in 1838 direct from his home among the woods and hedges of England to the limit of the forest area on the arctic circle, just north of Great Bear Lake. Except for the Atlantic voyage he had traveled to Bear Lake chiefly if not entirely through a country of hills and woods, and here for the first time in his life he was face to face with the open country. He came to a lake about thirty miles long surrounded by hills of varied form. There were trees at the east end but he could see them only in the far distance; there were trees at the west end which he probably did not see at all. He did what is customary when a European "discovers" some place to which he has been guided by the natives whose ancestors have been brought up in the vicinity: he gave the lake a name. He named it "Dismal Lake." And in his book he goes nearly to the limits of the language in telling us how desolate and dreary, forlorn and forbidding, blasted and barren the country was.

Half a century later there grew up in England a man by the name of David Hanbury. He did not come to the far north directly from England by a route exclusively through woods. For one thing, he had purchased a ranch and lived on it off and on for years in Wyoming. He was familiar with the prairie and even with the uninhabited prairie. He had read Thomas Simpson's book, and the adjectives had made enough impression upon him so that when he approached Dismal Lake he expected the place to live up to its name. But all Thomas Simpson had really meant when he strained his vocabulary was that trees were absent or far away and that there was some snow on the ground. To Hanbury treelessness and a covering of snow would not of themselves have constituted desolation. Perhaps partly as a reaction against Simpson, he goes to the other extreme and describes the lake as a wilderness paradise. Simpson chanced to come to the lake in winter and Hanbury in summer, but this was not where the difference lay, as Hanbury makes clear and as I can testify personally. For with a familiarity with the prairie and with treeless mountains equal to Hanbury's, I have lived a year in the vicinity of Dismal Lake and visited it both summer and winter, and I agree with Hanbury that the man who describes such a place as dismal, desolate and dreary is telling nothing of interest beyond revealing the peculiar meaning which certain common words have in his mind.

Those parts of Manitoba which produce more to the acre of the best wheat than almost any other part of the world are still frequently described as barren and desolate by visitors from a forest country, even by those who will concede that it is "the bread basket of the world." When land of great money value and acknowledged fertility is described as barren and desolate, we have the key to the common impression that the north deserves these terms.

You will remember that the North and especially the stars as seen in the North are frequently referred to as "cruel." This is a purely subjective word. The surf that is a delight to a strong swimmer may seem cruel to a landlubber who falls in. It is so with the North. If you are sufficiently inept at meeting its conditions, you may find it as relentless as the sea; but if you know its ways you find it exceedingly friendly and homelike.

One might go on almost indefinitely demolishing common concepts about the North, but we shall end with the depressing effect of arctic darkness.

When I first went North to spend the winter of 1906-07, I was a good deal of a hero. I had all the wrong notions about the North, or nearly all, for I had read most of the books that had been written on the subject. But, like the typical explorer, I was brave and prepared to fight the best fight I knew how and to die if necessary for the advancement of science. (You see I came from an instructorship in a university, and "science," rather than adventure or a desire for the laurels of the hero-martyr, loomed great before me.) I discreetly feared all the terrors of the North but I feared the darkness most. For in addition to the published books I had come in contact with miners from Alaska who had told me how people up there went crazy and shot themselves, either because of the depressing effect of the winter darkness or because of the nervous strain and insomnia caused by the "eternal daylight" of summer.

Fortunately for me, this winter was not spent with men like myself. In that case we might have hypnotized each other into actually feeling what we expected to feel. I had gone to an appointed rendezvous at the mouth of the Mackenzie but the ship that was to meet me there never turned up and I, the only white man in the vicinity, had to throw in my lot with the Eskimos. I was surprised at their kindness, courtesy and hospitality. I was surprised at how little conspicuous were the filth and other horrors I had read about, although there was enough for literary material if suitably magnified. But what surprised me most was that the sun was sinking lower every day and the darkness coming on apace without these benighted people appearing to worry at all over the circumstance. Four of them could speak broken English. As I remember it now, three out of these four expressed a frank surprise when I intimated that I dreaded the coming darkness; but the fourth said that he was familiar with the thought, for he had been on whaling ships and had often heard "tenderfeet" who were spending their first winter in the Arctic talking about the coming darkness. He himself had been put up to it by some mischievous persons to invent for the benefit of these green hands dreadful stories about the gloom of a coming winter. But privately he regarded dread of the darkness as one of the peculiarities of white men which he did not understand, and he went on to say that he noticed that the old whalers who had been in the North a long time soon got over it.

This ought to have been encouraging. But I was so obsessed with the "winter night" that I actually succeeded in working myself into something of a depression, and when, after an absence of several weeks, the sun came again, I walked half a mile to the top of a hill to get the first possible glimpse of it and wrote in my diary what a cheerful and wonderful sight it was. I never did this again. Now, after ten winters in the North, the return of the sun is scarcely more impressive to me, though more definitely noted, than the stopping of it at the summer or winter solstice when I am living in New York. And if I make mention of it in my diary the entry is never longer than half a line and is usually when I am on a journey to indicate roughly the latitude—for the day upon which the sun returns and the portion of it visible above the horizon the first day depend mainly on two factors, the latitude and the refraction, which latter in turn depends in part on temperature.

I have found that the ordinary ship's crew can be divided with regard to the arctic night into three sections: The most intelligent men, such as for instance young college graduates, can have the fear of the darkness explained away completely and they will pass their first "winter night" without any noticeable depression. The second group, such as the typical sailor or Alaska miner, have heard a great deal about how depressing the darkness is and you can explain yourself black in the face without their believing you.

They remember that Jones went crazy and they have not forgotten what Smith told them about his first winter, and they know they are going to be depressed. And they are depressed, to a degree at least. The third group are such men as Hawaii Islanders, Cape Verde Islanders, or southern negroes, whom we frequently have in our northern crews. They have never heard of the depressing effect of winter darkness and are quite as ready to believe the local Eskimos and the captain of the ship who say that the gloom of winter is imaginary, as to believe the forecastle men who are in dread of it. I have questioned every one of the men of this type whom I have met and none of them have noticed that they were appreciably depressed by their first "arctic night."

The winter darkness is to the Eskimo about what the hottest period of summer is to the city dweller. The darkness, as such, may not be agreeable to the Eskimo any more than the heat, as such, is agreeable to the man of the city, but to each of them it means the vacation period. The clerk gets his two weeks in which he can go to the seaside or to the mountains. The Eskimo has found it inconvenient to hunt during the periods of extreme darkness and sees to it that he has laid by a sufficient store of food to take him through for a month or two. Having no real work to do, he makes long journeys to visit his friends and, arrived, spends his time in singing, dancing and revelry. For this reason most Eskimos look forward to the winter darkness more than to any other period. The darkness of Christmas shows itself to be about as depressing on the north coast of Canada as the darkness of midnight on Broadway.

The soundest reasoning leads to the wrongest conclusions when the premises are false. On the basis of the Arctic as it is supposed to be the Eskimos would be as wretched in the circumstances of their lives as theory makes them. But the fact that they are not wretched has penetrated to most of us through the uniform assertions of about ninety per cent. of the northern travelers and ten per cent. of the northern missionaries. Although most explorers have filled their books with accounts of what a happy, carefree life is led by the Eskimos, a few have called them wretched, meaning really thereby that they imagine they themselves would be wretched if they had to live as the Eskimos are living. No one of them can have failed to notice how much leisure the Eskimos have for games, story-telling, singing, dancing and the enjoyment of life in general, and most explorers will agree that an Eskimo laughs as much in a month as the average white man does in a year. One reason why the Eskimo is happy is that in the uncivilized state he usually has enough wholesome food to keep him in perfect health. And if there is a royal road to happiness it is through health. From the missionary we must, if we are logical, expect a rather more pessimistic picture. He is by profession a reformer and goes North to improve conditions; if he found them excellent his work would, by his own confession, be useless. Some missionaries too, are so deeply religious (in the orthodox sense) that they are constitutionally incapable of conceiving that any one can really be happy unless he has been "saved."

When we realize that the Eskimos secure their living with little labor as compared with the rest of us, and that they are healthy and happy, it dawns on us that they are really inhabiting a desirable country. Nearly every close observer from Sir John Richardson down has pointed out that on the continent of North America the relation of the Eskimos to the Indians south of them has always been aggressive, and though there is fear on both sides, still the Indians are far more frightened of the Eskimos than the Eskimos are of the Indians. It follows, then, that the Eskimos have not been crowded by a more powerful people into an undesirable place which they now inhabit. There is no more evidence that the Eskimos have been crowded north by the Indians than there is evidence that the present population of England are living there because crowded north by the French.

But now comes the paradox of human conservatism everywhere. The Eskimos who inhabit these desirable coast lands and who are firmly of the opinion that they are desirable, were as grounded in the belief of the desolation and lifelessness of the ocean to the north of them as were the scientists or the explorers. The pioneer side of our work consisted in testing, in the way which we shall tell, the theory that the ice floes of the northern ocean, no less than the islands which sprinkle it, were capable of supporting life and that white men were competent to demonstrate it. The Eskimos considered theory and test absurd, and would take no part in it.

One attribute of a high civilization is a development of the spirit of adventure, of the will to experiment. It is possible to get some white men to try anything, no matter what the risk; but to get an Eskimo to try anything is not possible if the venture seems futile or dangerous. We do many things for honor and glory, for science and humanity, and some things for dare-deviltry; but to an Eskimo dare-deviltry is inconceivable and he could get neither honor nor glory from his own people by risking his life to establish a theory. They would consider his action merely silly and he would lose caste instead of winning it. Why should a man who lives in a country where seals are abundant and caribou can be had in addition, concern himself about establishing the fact that seals are abundant in some other place where caribou cannot be had? Enough is as good as a feast; and if you have plenty of seals here, what more is there to be gained if seals are elsewhere? So we had to do our work without the assistance of the Eskimos and in a field which was as much beyond their intellectual vision as the ice a hundred miles offshore was beyond the vision of their eyes.

Captain Robert A. Bartlett.

Dr. R. M. Anderson.

Most Northerly Clubhouse in America—Log Cabin Club, Nome.

The Most Northerly Citizen of Uncle Sam for Forty Years—Barrow, Alaska.

Charles Brower. Fred Hopson.

Most Northerly Theatre—Nome.

Most Northerly School, Post Office and Church, Barrow, Alaska.

# CHAPTER III

## GOOD-BYE TO "CIVILIZATION" FOR FIVE YEARS

WHEN our three ships sailed from the romantic "Gold Camp" of Nome, Alaska, late in July, 1913, northward into the polar ocean, I was dissatisfied with our expedition in only one important respect. It was too sumptuously outfitted. Forethought appeared to have anticipated every eventuality. We had a plan ready for every accident: if plan A went wrong, then plan B would be substituted. We had a staff of thirteen scientific specialists to look after the gathering of information each in his own department. There was a good man, ably assisted, in command of each of our ships, and in the *Karluk,* in which I sailed, I had Captain "Bob" Bartlett * with the reputation of the world's best ice master, the confidence of the crew, and his alternative replies to any suggestion or order of mine—"Right sir!" when he felt formal and the crew were within earshot; otherwise "Don't you worry—leave it to me!"

The trouble was, there seemed nothing left for the commander of such an expedition to do. "He spake, and it was so" promised to be the story of our enterprise. There may be much to be said for the fiat method of creating a universe, but it cannot be supposed to have been interesting. I feared I should be actually bored by all that smooth-working machinery.

My fears on this score began to be gradually removed. First, the thirty-ton gasoline schooner, *Alaska,* under command of Dr. R. M. Anderson, had trouble with her engine and had to put into Teller, ninety miles north of Nome, for repairs. Then a gale came up and our two remaining ships separated. This was because Captain Peter Bernard of the *Mary Sachs* (30 tons, twin propellers, gasoline power), with the advantage of local experience, believed in keeping his ship near shore, and did so, while Captain Bartlett, a "deep-sea skipper" from the Atlantic, struck for the open sea.

It was a lively gale. Our 250-ton *Karluk* was carrying more than she should below decks, and on deck she had 150 tons with which she would never have been allowed to sail had there been at the port of Nome rigid inspectors unwilling to except an exploring vessel from the rules that are supposed to promote the safety of ships at sea. She was so deep in the water with her heavy cargo that her decks were nearly awash, and in spite of good seamanship, crashing waves occasionally got a blow at the deck cargo, eventually shifting it enough to make her considerably lop-sided. Things were getting interesting when, after fifteen or twenty hours of a heavy sea, we got into the shelter of Cape Thompson. I don't believe the skipper would have liked to admit that we were running in for shelter as such, and so the understanding was that we pulled in there to wait for the *Mary Sachs* and to buy dogs and dog-feed. To get these commodities we followed up along the land to Point Hope.

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* For a brief "Who's Who" of the expedition, see the appendix.

Point Hope is just beyond the reach of tourists and of the journalists who write fascinating magazine articles about "primitive people untouched by civilization." It lies in that tame intermediate zone where missionaries, equipped with victrolas and supplied by yearly shipments of canned goods, labor heroically for the betterment of the natives, who realize that they are badly off just as soon as they are told about it. It is one of the anomalies of our world that it should take the efforts of so many self-denying people to awaken the wretched to a consciousness of their wretchedness.

We occupied twenty or thirty hours in buying a few dogs and a great deal of walrus meat for dog-feed at the village of Point Hope, and we also engaged two Eskimos, Pauyurak and Asatsiak. It was my intention to hire a number of Eskimos eventually, but I preferred to pick them up farther east, where I am personally acquainted with them and have known many since they were children.

I should have liked to wait for the *Mary Sachs* which presumably was behind us, but our gale had been blowing from the north and it was likely that the ice was on its way though still unseen and possibly distant. It seemed better to get along east toward Point Barrow before the ice should block the way, leaving the *Sachs* to follow, if indeed she were behind. For about a hundred miles northeastward we had a beam wind from the northwest and open water. But the swell was gradually subsiding, so we knew the ice could not be far away.

It is a principle of esthetics that you like what you are used to, and that nothing is so horrible as the absolutely strange. We are told by Plutarch that Hannibal's generals had heard much before leaving Carthage of the ugliness of Alpine mountains but that when they came in sight of them the grewsomeness far exceeded their worst fears. Similarly we southerners who have heard much of the horrors of the ice, and who associate it with such tragedies as the wreck of the *Titanic* or the death through starvation of Sir John Franklin's hundred men, are likely to feel about the polar pack when we come in contact with it that same sense of imaginings verified. But after years of friendly dealing with the ice, seeking my food upon its surface or at its margin, walking upon it by day and camping upon it comfortably at night, I am as much at ease among its floating cakes as the Swiss are among the Alps that horrified Hannibal's African generals. I have the feeling when I come to the ice from the open ocean that one native to forests may have when he comes to a wooded country after a journey over the prairie. I imagine Bartlett felt much as I did. I did not ask him.

I was born and brought up on the prairie, so I am always at home there. I have spent eleven years in close contact with the polar ice and shall always be at home there whenever I am able to get back to it. I am at home also in the big cities, for I got to them before I was yet mature and have lived in them for ten or fifteen years. But so far I have been unable to feel at home either in a forest or in a mountainous country, for my experience with them has never been long enough for me to become acclimated. I do not remember ever having more distinctly the feeling of homecoming than I did when, near Wainwright Inlet, the first line of white appeared upon the horizon. I climbed from the deck well up the rigging to have a good look at the pack.

While the appearance of the ice was friendly and familiar, it was in another sense not propitious, for it meant delay. The northwest coast of Alaska between Point Hope and Point Barrow is shallow inshore, without a real harbor anywhere. The northerly wind had brought in from afar the ice which three or four days before had been out of sight from the entire coast, as we later learned from the natives. Now it was coming in at a speed of perhaps a mile an hour. It had already struck the coast ahead of us, and as we proceeded the space of open water became narrower until about thirty miles southwest of Point Barrow there was no chance for further progress. Bartlett accordingly put the nose of the ship against a big ice cake, saying to me that now that we had to stop anyhow, we might as well use the opportunity to teach our "bunch of scientific tenderfeet" that fresh water could be got from sea ice.

This remark recalled a series of episodes beginning in an impressive suite in a London hotel where I had gone to call on Sir John Murray, who at that time divided with the Prince of Monaco the honor of being considered by scientific men the leading living authority on oceanography. I was in Europe for the purpose of securing special scientific equipment and a few experts for our technical staff, for, the expedition being British, we desired to get in other parts of the Empire, so far as possible, such men as were not available in Canada. On the advice of my friend, Dr. W. S. Bruce, Director of the Scottish Oceanographical Laboratory, and, so far as polar waters were concerned, a more trustworthy adviser than any one else in the world, I had already selected as the oceanographer for the expedition James Murray, who had been biologist with Shackleton on his first Antarctic expedition. Before serving with Shackleton James Murray had been associated with Sir John Murray in the Scottish Lochs Survey. We had now gone to call on Sir John for advice as to the proper equipment to carry and what problems to stress in our work. After a technical discussion of two or three hours as to various forms of sounding-machines, dredges, nets and other paraphernalia for ocean investigation, Sir John ordered refreshments and we spent a pleasant hour listening to his reminiscences of the Challenger Expedition "which discovered a new world at the bottom of the sea," and his later ocean adventures.

Among the stories told by Sir John was one of a cruise in northern waters, I think north of Norway or perhaps farther east. On this occasion they ran short of fresh water and something was wrong with the distilling apparatus, so that the ship's company were in difficulties. The sea where they were was mainly open, but here and there were small scattered floes, and off on the horizon they could see ice blink, indicating that more extensive ice was lying just beyond range of vision. It occurred to Sir John, he told us, that possibly this more extensive ice might have been formed in the mouth of one of the great Siberian rivers, for from his knowledge of ocean currents he thought it not at all improbable that ice which had lain in the mouth of one of these rivers the previous spring might now be floating somewhere in their vicinity, although the distance was considerable. He spoke of this possibility to the captain, and the ship steered towards the ice blink and presently found itself among substantial floes. They nosed carefully up to one of them. On examination they were gratified to find that this was "river ice from which they could get fresh water."

At this point I asked Sir John how he knew it was river ice, and was dumbfounded by his reply: "It was obvious," he said, "for the water on top was nearly fresh and the ice itself, except on the edges where the spray had been dashing on it, also tasted fresh." In spite of being the greatest living oceanographer, Sir John was unaware of the fact, which I then supposed to be well-known to all polar explorers, that sea ice becomes fresh during the period intervening between its formation and the end of the first summer thereafter.

Here we might digress again to comment on one of the differences between an art and a science. Among polar explorers are some of the noblest names in the history of Britain since Elizabeth, and so it is in the histories of many of the other seafaring countries. Most of these explorers have been great sailors and gallant gentlemen; some of them, such as Franklin and Peary, have scarcely been sailors in the proper sense, though their careers have not been for that reason any less honorable nor less honored. But few of them have been scientists, and polar exploration has never been a science. It has been rather something between an art and a sport. It is the essence of the code of the scientist to publish at once for the use of the world every secret, whether of fundamental principle or of technique. But it is no violation of the ethics of a craft or of a sport to keep secret and to employ exclusively for one's self and one's immediate associates such knowledge as one has. I once asked Peary why he had not published certain things that we were talking about, and his reply was, "My dear boy, I am not printing anything until I have got the Pole." It was only after he had reached the Pole and after he had retired that he wrote his book, "Secrets of Polar Travel."

I have found, since the point first came to my attention, that although some polar explorers knew that sea ice becomes fresh a large number never discovered it. In view of this it is really not so astonishing that Sir John Murray, although he had been a student of the ocean all his life, had overlooked this fact; for, after all, his work had been done mainly in tropical and temperate regions. There are few things considered more certain than that the ocean is salt, and there is no inference more logical (although no inference is ever really logical) than that the ice of salt water must also be salt.

Because of his position as leading authority on the subject and because I had already approached him in the attitude of one who knows little and hopes to learn much, I felt reluctant about explaining to Sir John my knowledge of the freshness of sea ice. For one thing, it is always a delicate matter to spoil a good story by taking away the point of it. However, I tried in a diffident way to explain that I also had had the idea of the saltness of sea ice when I first went North, but that I had learned from Eskimos that it was fresh, through observing that they commonly make their drinking water from it and that this drinking water is perfectly fresh to the taste. Also I suggested that if there were any salt it would appear when one makes tea, for the quality of water is then peculiarly apparent. We had used it for five Arctic winters, I said, without ever finding any salty flavor in the tea, except where we had chosen ice that had been dashed by salt spray so late in the fall that the spray had frozen on the outside. Even then fresh water could be secured by chipping off the outer or spray layer and using the inside of the piece.

Indeed, I don't think I got quite so far as this in my explanation when I noticed that Sir John was not looking responsive. Some interruption occurred, and he changed the topic. Evidently he cared for no information from me on this subject and had no idea that what I was telling him was anything more than some unsupported heresy of mine. As we walked to our hotel I commented to James Murray upon how extraordinary it was that this eminent oceanographer did not know the freshness of sea ice. I took it for granted that my companion agreed with me and did not realize until months later that he had received my remarks in the silence of disbelief.

One day at Nome, when the *Karluk* was lying in the roadstead loading up, I received a written request on behalf of the scientific staff to meet them at a certain hour to discuss the equipment of the *Karluk*. I thought at first it was the scientific equipment they wanted to discuss, and it seemed to me rather late in the day, since nothing of that sort could very well be purchased at Nome. It turned out that what they had on their minds was the water tanks of the ship. They pointed out to me that on the voyage from Victoria to Nome, while they had not actually gone short of fresh water, they had been obliged to be very careful with it. They had had enough, for instance, to wash their faces with, but had been compelled to take their baths exclusively with salt water. If the voyage had been a little longer they would have had to wash even their faces and hands in salt water, reserving the fresh water entirely for cooking and drinking. It seemed to them therefore that I should do something about increasing the capacity of the fresh water tanks.

This proposition astounded me. I had considered carefully the capacity of the tanks in relation to the voyage from Victoria to Nome, which is almost as long as the Atlantic voyage from New York to Liverpool. In consultation with Bartlett I had decided that the tanks would be adequate even for this voyage, and now that we had reached Nome and were on the outskirts of the polar sea, it had appeared to me that all doubts were over. I suggested that it would be only a few hundred miles until we should be among the polar ice. I said that the ordinary method of navigation in Alaska is to follow the land as you proceed eastward, never going far from shore and always keeping between the land and the ice. We could go inshore for water at any time, but if we went too far offshore and got beset, we should always be able to get fresh water off the ice itself.

At this point Murray became party spokesman. He said that in winter it would be easy to get snow for cooking and drinking, but that in summer there would be no snow on the sea ice, and that if the ship became hemmed in by floes in such a way that it was impossible to reach the land, we could have no way of getting drinking-water. When he had been in the Antarctic with Shackleton they had sometimes used ice for cooking, but that was different, for it was always glacier ice they used. It was well known there are no icebergs or fragments of glacier ice in the sea north of Alaska. And he went on to say that I might possibly consider it to smack of insubordination, but that he had been constrained to tell the other members of the scientific staff in this connection about my interview with Sir John Murray, where he had himself been present and where Sir John, who was the greatest authority on the ocean living, had dismissed as ridiculous my suggestion that salt water ice became fresh. It was only then I recalled the silence of James Murray on that walk home.

It turned out impossible for me to convince my staff that it would be safe on the score of drinking water to take a ship out among the ocean ice. A number of them were prepared to resign, considering that a person so lacking in judgment and discretion as to be willing to take an entire ship's company into a position where they might all die of thirst must be in general unsuitable for the command of any arctic expedition.

Had I known in advance the topic of the meeting I should have suggested that Bartlett be present. I now went to him and asked him about his experience with getting fresh water off sea ice. He replied that it was well known among the Newfoundland sealers that you could always get it and that they never carried large fresh water tanks on that account. In fact, there had never been a time when Bartlett did not know that salt water ice became fresh.

At the time Bartlett thought he would have no trouble in convincing the scientific staff, but he told me later that he had had "a hell of a time to get some of that crowd to see reason." He did succeed in a measure, at least to the extent that I heard nothing further about the size of the tanks, and I had nearly forgotten the incident when his remark about "showing our bunch of scientist tenderfeet that ocean ice is fresh" recalled the whole train of events.

After the ship had been tied to a floe, the first officer, John Anderson, went "ashore" on the ice, dragging the end of a long rubber hose to a small pond on the surface about ten yards from the edge, and water was pumped in till all our fresh water tanks were full.

The next meal was a triumph for the staff. Somebody remarked that the coffee was bad, and it was found that much of the food was more or less spoiled through being too salty. When the cook informed us that it must be because of the water, a sampling brought out the fact that it was indubitably brackish. There were several remarks passed then about the probability of the laws of nature working on polar expeditions as they did elsewhere, and Scripture was quoted to the effect that salt is not likely to lose its savor.

This miscarriage hurt Bartlett more than it did me, for a man who commands sailors for years finds it useful and almost necessary to appear infallible. But we were both soon justified. The trouble was that the mate, being a new man, had taken water from a pond near enough to the edge of the floe to have been filled with salt spray during the recent gale. The ship's tank had to be emptied and the hose carried a few yards to another pond remote enough from the edge so that the water in it was produced either by the falling of rain upon the floe or directly by the sunshine. The tanks were then filled with perfectly fresh water, and that trouble was over.

When we tied up to the floe we had a sea of scattered ice behind, but ahead between us and Point Barrow everything was packed tight. It was only a question of hours, if the wind remained in the same northerly quarter, until we should be as closely hemmed in from behind as we were before. The wind did not change, and by noon the next day everything was so closely pressed together that we felt sure of being able to walk ashore, although the distance was several miles. We had drifted ahead since tying up and the village of Cape Smythe now lay only about twenty-five miles ahead. I thought it would be a good idea to walk to land and then up the beach to make some purchases in the village and possibly to hire some Eskimos, these to be picked up by the *Karluk* whenever the ice opened again so she could proceed. Thus we might save a day or two of time. To give Dr. Mackay a chance to compare the Arctic with the Antarctic, I invited him to come with me. A dog sled carrying a canoe for use in an emergency accompanied us ashore, but we found not the least trouble in hopping from cake to cake even in places where there was a little water separating them, and finally from the last cake to the beach. The sled with the boat returned to the *Karluk* and we started on our walk northeastward.

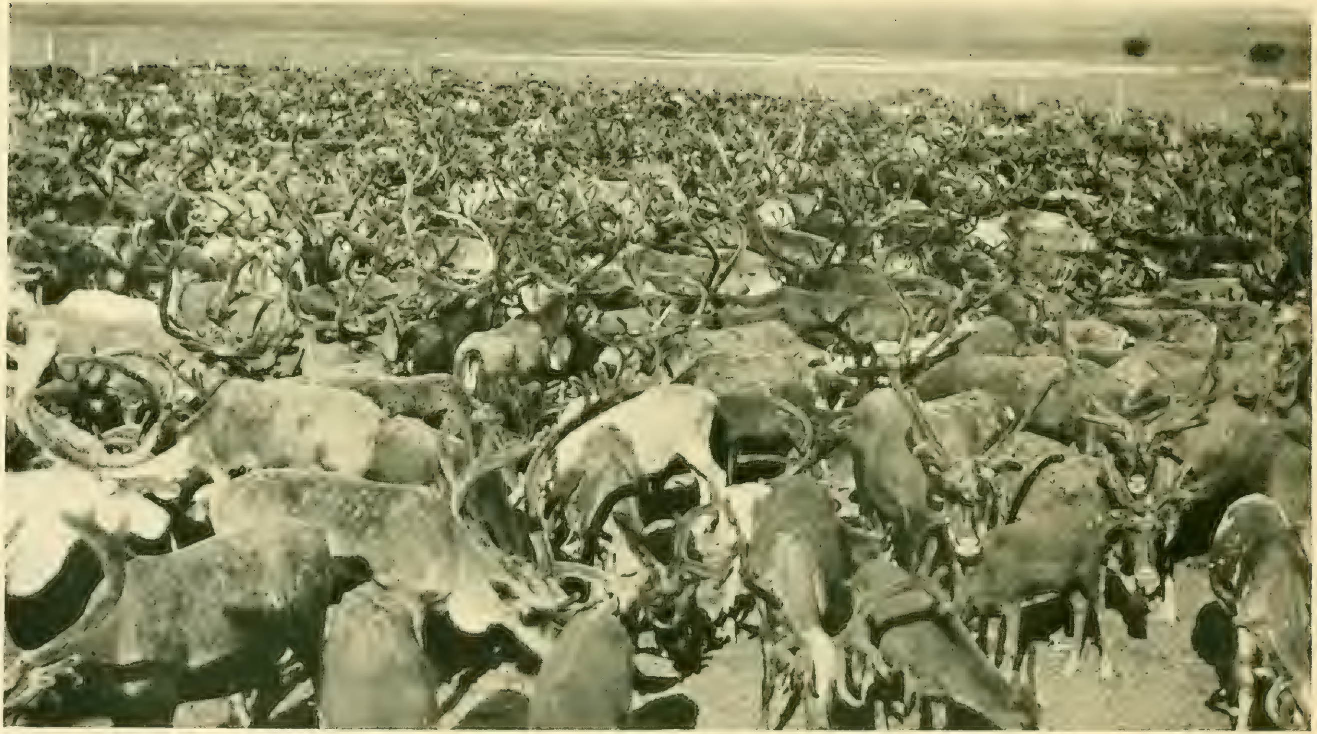
The first thing the Doctor noticed was the prairie-like character of the land, for grass covered everything. I think he almost hoped at first that this was the exception, but by the time we had walked a few miles over a country something between a prairie and a meadow he finally asked if all the Arctic was like this. It did not come at all up to his expectations; or, rather, it did not come down to his expectations. He had been reading the literature of arctic exploration from childhood. Eternal ice and everlasting snow, silence and desolation were what he expected. When he found instead green grass, twittering birds and buzzing mosquitoes, he felt like one who runs a long way expecting to see a fire and finds no houses burning. I was able to reconcile him to the situation somewhat by promising in due course winter blizzards, fairly low temperatures, and a few worthy difficulties.

But it was clear that his general feeling remained one of disappointment, if not disdain. This was nearly the most northerly point of continental North America, and it measured up to neither the books that he had read nor the Antarctic in which he had spent a year. The fact is, however, that although in appearance the Antarctic does come more nearly up to story-book standards, it is an easier country to deal with, especially for those who come to it burdened with the heroic ideals of the classic explorer. Peary has made this clear in various of his books and other writings.

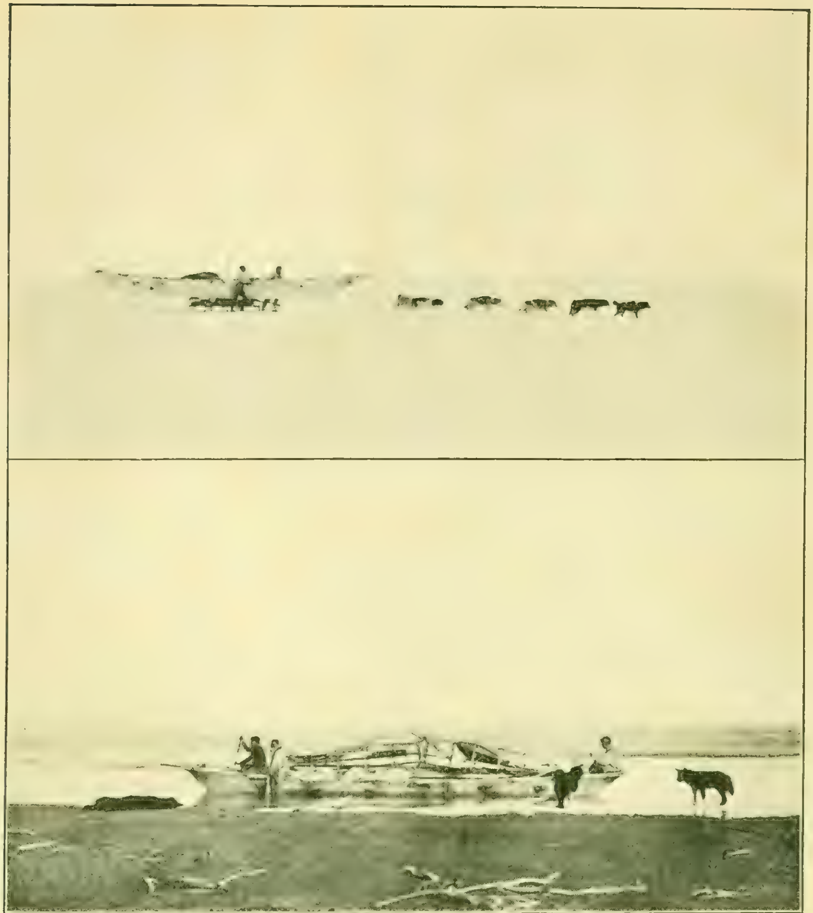
On the way to Cape Smythe the Doctor and I met a party of Eskimos tending one of their herds of domestic reindeer. We walked among the herd and found them fat, considering the season, and much tamer than range cattle in places like Montana or Alberta, although not so tame that you could walk up and touch them. Commonly they allowed you to get within ten or fifteen feet and then moved quietly away. The Doctor ran after some of them, pretending he was trying to catch them, and they just kept out of his reach. Very likely they were used to being similarly pursued by the Eskimo children. Incidentally I learned that one of the Eskimo owners now had about a thousand head of reindeer. As there were many other Eskimos willing to buy them from him for twenty-five dollars per head paid in furs, and as he was a clever trader and could easily have made on the furs an additional profit, we can say that his property in reindeer alone was worth over $25,000. This Eskimo, named Takpuk, was also doing whaling on a large scale and employing others to trap for him, so that he had in his service about a hundred and fifty men. He was, therefore, both for wealth and enterprise a remarkable exception to what we suppose Eskimos to be, although not so much of an exception to what Eskimos really are.

At Cape Smythe I was among old friends. I knew most of its three or four hundred Eskimos, and the Europeans were either friends or acquaintances. In the Government school were Mr. and Mrs. G. W. Cram, and at what had formerly been the whaling station but is now mainly a trading establishment were my old and very real friends Charles D. Brower, Jack Hadley, and Fred Hopson, Mr. Brower being the resident manager and part owner of the Cape Smythe Whaling & Trading Company.

During the next two days I engaged the single Eskimo, Kataktovik, and the married man, Kurraluk, with his wife, Keruk, and their two children. I also engaged Hadley; and there were many reasons why I wanted him. For one thing, all my *Karluk* men were new in the Arctic except Bartlett, and Bartlett came from a part of the Arctic where conditions are so fundamentally different from what they are around Alaska that I felt the need of at least one man with whom I could talk over local conditions with a certainty that he had the knowledge necessary to criticize my own ideas and give opinions of value. I had the highest opinion of Hadley's judgment, both because of the sort of man he was and because he had been living on the north coast of Alaska acquiring experience for more than twenty years. His experience was of all sorts. He



Alaskan Reindeer Herd.



The Adaptability of the Skin Boat.

(1) Umiak being hauled on sled. (2) Umiak under paddles in narrow shore lead.
(3) Umiak raised on edge to shield goods from rain.

had been trapper and trader, and a whaler both on board ships and with the Eskimos in their skin-boats.

This last was an important consideration, for I look upon the Eskimo skin boat, as do all those in Alaska who have had experience with it, as the one boat suited for use among ice. Such a skin boat, or umiak, when thirty feet long, which is a common size, will carry a cargo much larger than a 28-foot whale-boat, although the whale-boat is three or four times as heavy. And the whale-boat besides is very fragile. When the ordinary clinker-built whale-boat is moving at a speed of six miles an hour it is easily stove by contact with even a small fragment of floating ice, while an Eskimo skin-boat going at the same speed can bump into ice of almost any shape or size without injury. With a whale-boat it is as if the ice were struck by an egg-shell; with a skin-boat it is as if it were struck by a football. In one case there is a crash and a dead stop; in the other a thump and a rebound. And if the umiak suffers injury it is merely a cracked rib that can be replaced, or a hole in the skin which can be patched with needle and thread. An umiak capable of carrying more than a ton of freight can be carried over land or solid ice by two men, and if placed on a low sled of the type used for such boats it can be pulled along by three or four dogs, or two or three men.

Any one who goes to the polar regions in ships realizes that any ship, no matter what the strength or what the style of construction, will be broken by ice pressure if the pressure comes in any but a certain way. If a ship is wedge-shaped like the *Fram,* or is semicircular in cross-section like the *Roosevelt,* she may be lifted up by ice pressure if the ice is so low that it strikes her below her line of greatest diameter. But as her greatest diameter is only a few feet above the water, and as some ice cakes are ten, fifteen or twenty feet out of water, it is generally luck that determines whether the pressure is so applied as to lift the ship or to crush her.

Peary says that "any vessel navigating in polar waters may at any time be crushed so suddenly that nothing below can be saved." * I am glad Peary puts this so clearly, for although I know of no whaling captain or experienced ice traveler who is of any other opinion, still, there is among arm-chair explorers a very common belief that ships of a certain design or strength are immune against being crushed.

Realizing this, I was naturally particular about providing not only the plans but the equipment for retreat towards land in such an event. The central item in any such equipment, in my opinion, should be the skin-boat. If a ship is crushed by rapidly moving and tumbling ice floes in the summer, a retreat from her with any equipment may become dangerous. But if she is broken in winter, then the process of breaking up is fairly sure to be slow, giving ample time to place on reasonably stable ice in the vicinity any equipment that one cares to save. The crew of the *Karluk* would be about thirty, and a typical skin-boat will carry about that many people. Accordingly I purchased an umiak and planned that in case of danger it would be the first thing saved and placed on the ice. If the wreck of the ship occurred in winter the umiak would be put on a low sledge, which I also bought for the purpose, and hauled towards shore over the ice either by men or by dogs. As shown in the adjoining illustrations, we frequently travel with such a boat hauled by five or six dogs and carrying inside of it all the camp equipment of the party.

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* "Secrets of Polar Travel," by R. E. Peary, p. 109.

And along with this boat I wanted Hadley, who through much experience was not only a master in the handling of skin-boats but knew how to make and repair them. Of course our Eskimos were familiar with these things but their knowledge would not be so useful in a party of white men as the knowledge of a man like Hadley, who had also the ability to explain and, if necessary, to command. The boat and Hadley were therefore taken partly as insurance against a by no means improbable breaking of our ship.

We spent two days very pleasantly as guests of Mr. Brower at his station. After my purchases for the ship's use had been made, I bought some Eskimo ethnological specimens and in particular a clay pot which Mr. Brower had been able to secure for me. Although on previous expeditions I had dug up bushels of fragments of clay pots, I had found no unbroken specimen. In view of the fact that some authorities have doubted that the Eskimos of northern Alaska made clay pots at all and in view of their rarity in any event, this was something of a prize. Another remarkable specimen was a lip button, or labret, made of "American jade" (jadite). This beautiful stone is one of the toughest and least workable, and still the ancient Eskimos made adzes, knives and ornaments of it.

The custom of wearing lip buttons, like any other fashion with which we are not familiar, seems to us strange and possibly grotesque. According to tradition, the Eskimo women used to wear them, but in historic times they have been used only by the men. It is said the women had one perforation in the middle of the lower lip. If that is so, their method of wearing them was the same as that of the Indians of southern Alaska. But the Eskimo men have two holes pierced in the lower lip, one below each corner of the mouth.

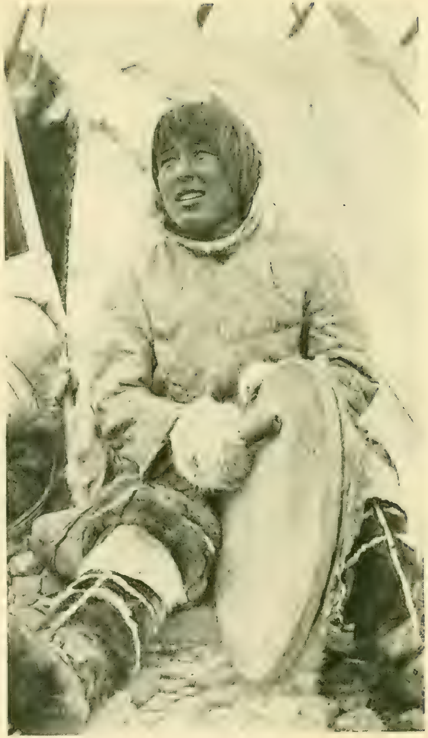
The initial perforations are made when a boy is fourteen or sixteen years old, when little plugs are put in, just big enough to keep the hole from closing up entirely. As the healing takes place it is the mucous membrane of the inside of the mouth rather than the skin of the outside of the face that forms the lining of these holes. After the healing is complete, bigger and bigger plugs are put in until the hole in the lip is somewhat bigger in diameter than a lead pencil. The ornaments are then put in by one of two methods: either they are inserted from the inside, somewhat as a collar-button is put in a shirt, or they are buttoned in from the outside, if it is desired to wear one of the large labrets.

I was now able to buy one of jadite that, as I remember it, must have been about two inches and a half long and more than an inch wide. This ornament, that would have been unique in the ethnological collection of any museum, was unfortunately later lost, and we have not even a photograph to show what it looked like. I suppose the Eskimos considered it beautiful, but to us it would have been remarkable chiefly in showing to what grotesque lengths ornamentation may go, for when buttoned into one corner of the mouth it would have extended below the chin of the wearer and up his cheek fully halfway to the eye.

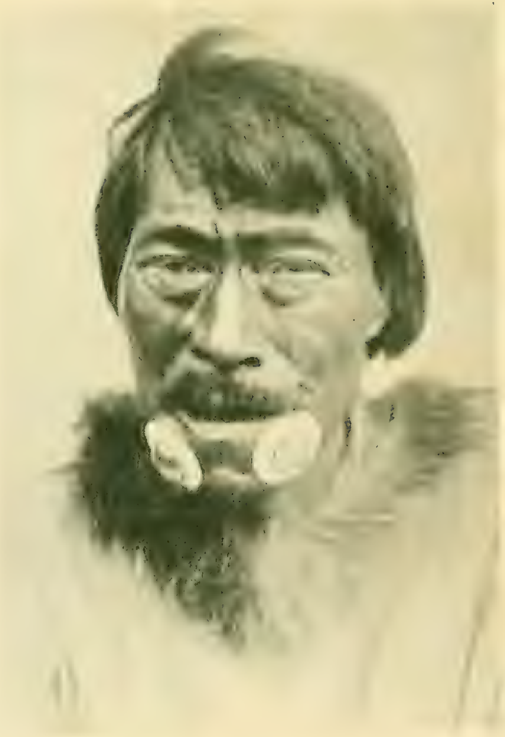
The custom of wearing labrets once extended from the most southerly Eskimos on the south coast of Alaska around the west end of the peninsula and east along the north coast into Canada as far as Cape Bathurst. When I first came to the mouth of the Mackenzie in 1906 it was still customary to pierce the lips of young men, although there were some who refused to have it done. A year or two later the practice was definitely abandoned and now perforated lips are seen only among men of middle age or beyond.

It would be of ethnological interest to know why the labret fashion did not extend east beyond Cape Bathurst. Following the tendency to seize upon explanations that are "sensible," some writers have pointed out that the severity of the climate increases gradually as you go eastward from Bering Straits, so that labrets could not be worn to the eastward without great danger of freezing the face. The stone of which the labrets were made was assumed to be a good conductor of heat, and to induce freezing of the parts immediately touching it. The trouble with this eplanation is, first, that the postulated increasing severity of winter climate as you go east is by no means pronounced; and second, that no such freezing as premised has ever been known to occur. I have observed that Eskimos who take their labrets out while in the warmth of the house put them in before going out of doors into the most severe weather, and I have found on inquiry no Eskimo who has ever heard of freezing of the lip brought about by the wearing of a labret. On the other hand, being without the labret out of doors is inconvenient for those who have perforated lips, for the holes in many cases are so low that the saliva streams out through them and down the chin if they are not plugged up with a button of some sort. This happened in the house also and some of the old men had to be continually wiping their chins. Outdoors, however, the wiping could not be done comfortably and it would have been very messy to have the saliva stream down on the front of the fur coat. So the real labrets were formerly worn on going out; and now that the fashion has set against these ornaments, inconspicuous wooden or ivory buttons are worn on going outdoors in cold weather by those still living whose lips are pierced.

It is more probable that the Eskimos got the fashion by coming in contact with labret-using Indians on the southern coast of Alaska, that the fashion gradually spread from those Indians northward and eastward for a thousand miles or so through the Eskimo country, and that it had not had time to pass beyond Cape Bathurst. We have some traditional evidence to support this view. Moreover, we know that the tobacco habit was spreading similarly east along the north coast and had reached the mouth of the Mackenzie about a hundred years ago. Roughly seventy years ago it got to Cape Bathurst, about the same time as the first white visitors. The coming of the whites accelerated the eastward spread of the tobacco habit because the whites were used to it: but it stopped the labret fashion because the whites were not used to it and brought their influence against it.



Music for an Outdoors Dance—Copper Eskimos.



Labrets Worn by Mackenzie Eskimos.

Mackenzie Family.

Eskimo School Children at Barrow.

# CHAPTER IV

## THE SEEDS OF TRAGEDY

OUR second day at Cape Smythe the *Karluk,* somewhat to our surprise, came into view. The wind was still northwesterly and the ice was densely packed against the land. She was not coming along steaming through any open water, but was being carried helpless by a current that was grinding the ice northeastward along the coast. Sometimes she was moving broadside on, sometimes stern foremost, and at all times she was powerless. Her speed was probably about half a mile per hour. When she came near the village it was apparent that she was going to pass us at a distance of less than a mile from shore. Although the ice cakes were drifting, rising on edge, quivering, cracking and splashing, this was all in the slow and nearly uniform way which does not worry Eskimos or other persons used to traveling over ice. So we loaded our umiak on a sledge, loaded other sledges with the supplies purchased, and with the assistance of half a hundred Eskimos and many dog teams belonging to Mr. Brower and to them, succeeded in getting all our gear aboard the *Karluk* as she drifted by. We then said good-by to our friends, expecting not to see them again for two or three years.

While at Cape Smythe we learned that had we come along two or three days earlier we should have found nothing but open water and there would have been no trouble for either a steamer or a sailing vessel to get around Point Barrow, the extreme tip of which is about ten miles northeast from Cape Smythe. Two ships had, in fact, passed around safely and easily, the *Elvira,* commanded by Captain C. T. Pedersen, and the *Polar Bear,* commanded by her owner, Captain Louis Lane.

A mile or two beyond Cape Smythe while we were still being ground along by the ice, the *Karluk* began to creak. The ice did not appear very heavy and a discussion arose among the men as to whether the *Karluk,* if more powerful, might have been able to break her way from the grip of the ice and proceed as she pleased. It was the general opinion aboard that such ships, for instance, as the United States Revenue Cutter *Bear,* which was expected at

Cape Smythe in a few days and was a vessel known to all of us, would have been able to steam through the ice easily. The *Bear* is a powerful wooden vessel of the old Scotch whaler type and a very good ice ship. This discussion has been settled since, for the *Bear* arrived at a point southwest of Cape Smythe a few days after us, was caught in the ice near where the *Karluk* was caught, and like the *Karluk* was carried helpless, stern foremost, past Cape Smythe. She was even less lucky, for the *Karluk* gave no worry beyond some ominous creaking, but the sides of the *Bear* were squeezed so that her decks bulged noticeably.*

When in our slow grinding movement we finally got opposite the northwest tip of the continent at Point Barrow, the pressure was relieved. We were not out of the grip of the ice, however, and for some hours things looked pretty bad, for as soon as we got beyond the Point our ice started off to the northwest at a speed about four times as great as before, or about two miles per hour.

This we had expected. The summer of 1912 when I spent several weeks at Cape Smythe, the whaling bark *John and Winthrop* lay at anchor about a mile from the coast for two or three weeks. During most of that time the wind blew from the northeast with a force running as high as what sailors call a "strong breeze"; and still the current, coming from the southwest and running against the wind, was so strong that not once do I remember seeing the ship swinging at her anchor before the wind, as might have been expected, but always either broadside to the wind or with her stern into the wind. During that same time, however, the condition east of Point Barrow had been different. Then the current was running with the wind, and when the two currents met in the vicinity of the Point they took a course which was a resultant of the motion and strength of both, and after joining forces ran off to the northwest. The *Karluk* was now in the tail of this Y. But according to theory, the current ought soon to spread and spend itself, and we were not a great deal worried.

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* ". . . . The chief work of a polar ship is to push and pry and wedge its way in and out among cakes and floes ranging from three to twenty or fifty and even up to one hundred and twenty feet thick. A passage cannot be smashed through such ice, and nothing remains but to squeeze and twist and dodge through it. A hundred *Yermaks* (the powerful Russian ice breaker) merged in one could accomplish nothing in such ice.

"Many qualities are necessary in a first-class polar ice-fighter. First, there must be such a generally rounded model as will rise readily when squeezed, and thus escape the death-crush of the ice. Then there must be no projection of keel or other part to give the ice an opportunity to get a grip, or to hold the ship from rising."—"Secrets of Polar Travel," by R. E. Peary, pp. 6-7.

In this everything went according to expectations. After a few hours of northwestward drift, the ice "slackened out" and we were able to advance under our own power. The *Karluk* took an easterly course and proceeded along the land, keeping six to ten miles from the shore, without adventure, until we got east beyond Cape Halkett. There was scattered ice everywhere, but none to interfere seriously with progress.

In crossing Harrison Bay east of Cape Halkett we had a small adventure. Among the local whalers who have been in these waters since 1889 there is a custom of "sailing by the lead." They know on every part of the coast how near it is safe to approach, as indicated by the soundings which are taken continuously by a man stationed at the lead. But our officers were new in these seas, and were deceived by navigation signs upon which they relied. They had not previously sailed in icy waters except such as have a change of levels due to tides. In most parts of the north Atlantic seaboard a cake of ice that is aground in shallow water has a peculiar mushroom-like appearance, for high tide is only a matter of an hour or two, and at all other times these cakes are lying aground with the water around them much lower than it has been at the moment of high tide. In such places an experienced navigator can tell by glancing at a cake of ice whether it is afloat or aground, and if it is afloat he always knows that his ship has plenty of water under her keel. But here in Harrison Bay even the grounded cakes presented an appearance of being afloat, for there had been no rise or fall of tide to give them undercut edges of the kind found in the east.

I had not been on deck for some time, for no difficulties of navigation had presented themselves, but when I did go on deck I could see from the bridge an island almost directly ahead. To any one of local experience this was a sign of imminent danger. I asked the man at the lead, who was supposed to take a sounding every fifteen minutes, what depth of water we had and he replied nine fathoms. I knew this could not be true, for no island would be visible from the bridge in Harrison Bay if the water were nine fathoms. I realized that the man, thinking actual sounding unnecessary, was merely pretending to sound. Accordingly I asked Captain Bartlett to come on deck, but before he had time to quite get his bearings, the oceanographer, Murray, came running to us with considerable excitement, saying the ship was aground and had stopped moving.

The going aground of a ship under steam, even though it is moving at a speed no greater than six miles an hour, would ordinarily be accompanied by something of a shock. This was not so in our case. The bottom here is soft mud, for this is the mouth of the Colville River and the depth may not vary as one steams directly towards land more than a foot or two to the mile. As we were not steaming directly towards land (except for the little delta island that lay ahead), the depth may have been changing even less than a foot per mile. In this way the keel had commenced cutting the mud so gradually and gently that the ship was brought to a full stop without anybody but Murray realizing it. He noticed it because he was near the stern dredging for marine life and his dredge rope had slackened. He had then gone to the stern and had seen that the propeller was churning up mud and that the ship had stopped.

We have just said that there is practically no tide in this region. Normal tide varies during the twenty-four hours only by some six or eight inches. But there is at certain times what we call a "storm tide." It seems that when a strong southwest or west wind begins to blow in the region of Bering Straits, it produces (through barometric variation of pressure, perhaps) a wave that moves eastward and reaches the Colville delta or Herschel Island, possibly eight to twelve hours ahead of the storm itself. This rise of water that presages a strong sou'wester may sometimes amount to as much as five feet, and even in a moderate southwest wind the rise may be a foot or two. There is a corresponding fall with or before a northeast wind, these two being the directions of the main winds in this locality. Now it happened, luckily for us, that a storm tide was coming in from the southwest, so that after an hour or two aground the water rose enough to float us. As we made our way to seaward, this time casting the lead every few minutes and steaming carefully, we had to go a mile or more before we got an extra foot of water under our keel.

From the Colville delta eastward the ice kept getting thicker. There was a light breeze from the northwest bringing it in slowly from abroad. Finally, it became impenetrable. We might now have turned the ship to seaward, on the theory commonly held in the north Atlantic that the farther away from land you are, the better the chance of finding the ice scattered and conditions permitting navigation.

There was also the Alaska or Beaufort Sea theory. For years I had been listening to the tales of local captains, telling that when they first navigated these waters after serving their apprenticeship in the Atlantic they had lost ship after ship by following the Atlantic rule of keeping twenty miles away from land. Their experience had been that if ships stuck among the Atlantic ice they were very likely to get loose again eventually, for in most places the current runs south into freer waters where the ice slackens out. But north of Alaska they had found conditions diametrically opposite. There a ship that gets into the ice and starts moving with it is not likely ever to get out, for the pack gets tighter instead of loosening, and the drift is not southward but northward to the more ice-infested regions. I had heard these captains tell that over half a hundred ships had been lost by the American whaling fleet in the Beaufort Sea before they finally adopted the rule of always keeping between the land and the ice. Since then a few vessels had been lost, but the proportion had been far less and there was always this difference: that formerly when ships were far from land the men had great difficulty in making their escape by boats or sledges, and all cargoes were invariably lost; while of recent years if a ship had been squeezed against the land or sunk by pressure near shore, the crews had never been in serious danger. Entire cargoes had been saved in some cases, and the more valuable parts of them in others. This was so well known that whenever a whaler sank near shore without saving the best of her cargo, the talk in the whaling fleet was that the size of the insurance policy explained the loss.

So ran the arguments of the local whaler. In reply to them it could be said that while these conservative practices were all right for merchantmen, a bolder policy might reasonably be expected of explorers whose chief concern was neither the saving of cargoes nor the collection of insurance policies. One flaw in the whaler argument was that the fifty ships lost might not have been lost at all but for the timidity through which they had usually been abandoned by their crews. Who knew but they might have been triumphantly extricated if the crews had stayed by them a month or a year? We certainly would not abandon the *Karluk* if she were caught in offshore ice.

Bartlett and I discussed these things fully, and decided for the more conservative alternative. We steamed inshore according to local practice and followed the edge of the ice until, when it prevented further eastward progress, we finally anchored at Cross Island. This is one of an interrupted chain of reefs which lie about fifteen miles north from the mainland coast of Alaska, separated from it by a "lagoon." Between the reefs and the main shore are devious channels through which ships drawing even more water than the *Karluk* can navigate if they have either a good chart or expert local pilotage. A boat could be lowered and sent with a sounding lead ahead, the *Karluk* following when the boat had signalled sufficient depth of water. By this method we could enter the lagoon at Cross Island, proceed thirty or forty miles east and come out into the ice again at that point. But of course it was always possible that the northwest winds would continue through the entire season, and that the freeze-up would come without giving us a chance to leave the lagoon till next summer if we once entered it.

We never had on the *Karluk* any formal consultation of all the officers, any organization approaching in character a "General Staff." But informally the ship's officers and scientists discussed all questions of policy freely and every man among them knew the opinions of every other. The only exception to this rule happened to be myself. We had taken the ship over from a whaling captain, Captain S. F. Cottle, and her internal arrangements were still in general those that immemorial experience has shown to be best on small ships that make long voyages; the sailors bunked forward and had their mess; the rooms of all men of the grade of officer—mates, engineers, and in our case the scientific staff—were amidships, and they had their own mess. The commander alone was aft, in quarters that differed from the others not so much in being luxurious, though they were roomy, as in being isolated. Partly through this isolation, inherited from my predecessors the whaling skippers, partly through inclination, I discussed ice navigation little except with two men—Bartlett because he was sailing master, and Hadley because he was an old friend and a fountain of inexhaustible northern lore.

Directly, then, my views of ice navigation were not well known to officers and men. Indirectly they were well known, for Hadley talked freely with every one and it was understood, and correctly, that his views and mine seldom differed materially, being founded on a common experience in the same sector of the Arctic.

As we are now at an important point of the expedition, it is best to take a backward glance in order that the situation of the moment be made clear.

When I first learnt from the National Geographic Society and the American Museum of Natural History that they would furnish me with enough money to buy a ship, I asked the advice of Captain C. T. Pedersen of San Francisco, whom I had long admired as the best ice master personally known to me. Some of the associates of my earliest years in the North—for instance, Captains Leavitt, Tilton, Bodfish and Cottle of the New Bedford and San Francisco whaling fleets—had had more experience with the ice of the Beaufort Sea, but they had either retired or were by now rather old for the vicissitudes that might follow shipwreck.

Every whaling ship on the Pacific Coast was known to Captain Pedersen, and he had advised me, that of them all the *Karluk* was the soundest and best adapted to our purposes. Though she had been fighting Beaufort Sea ice for twenty years she was still as strong as when new. This opinion was afterwards amply confirmed by three different ship inspectors engaged to examine her and every other available whaling ship from keel to rigging, and later when she was overhauled in the naval drydock at Victoria. These details are mentioned because one view of later events was that they resulted from the *Karluk's* being "unsound."

Before purchasing the *Karluk* I had engaged Captain Pedersen as sailing master, and it was he, acting as my agent, who actually took the ship over at San Francisco and, after the expedition became a Canadian naval enterprise, sailed her to the Victoria naval base to be drydocked. Later, during my absence in Europe, Captain Pedersen got the unfortunate impression that in order to be our skipper he would have to renounce his American citizenship. It was for that reason he accepted an offer to go to the Arctic for some San Francisco fur traders. That the impression was not valid is best shown by the fact that Captain Bartlett, engaged in his place, was and remained an American citizen (naturalized—he was born in Newfoundland.)

In most fields men of local experience are the most valuable. But with Captain Pedersen gone Captain Bartlett became my choice on the ground that his experience with Peary, although in another part of the Arctic, made him the best man available. Furthermore, at the moment of having to make up my mind I was with Admiral and Mrs. Peary, both of whom advised it strongly. Peary reminded me that Bartlett was a marvel at handling sailors or stowing a ship, and was a man to take the responsibility of every detail off your shoulders.

When Bartlett took charge of the *Karluk* I found him everything that Peary had said. With the reputation he brought with him and his efficiency in managing the affairs of the ship, he won the admiration and confidence of everybody. And he obeyed every order effectively and without quibbling.

We have outlined the two main views of ice navigation—the bold Atlantic policy of "keep away from the land, face the ice and take your chances"; the cautious Alaska one of "hug the coast, play safe, and if you don't get there this year you may have another chance next." There were divided opinions aboard, but I was in command and the decision and responsibility had to be mine. I decided for what a friendly person would call the bolder course. But whoever prefers to be truthful rather than kind must say I chose the wrong alternative.

After lying at Cross Island for several hours, discussing theories and plans, we hove anchor and steamed deliberately north, away from land, threading our way between the ice-cakes and occasionally ramming them to break a way. "It may be safe, *but I don't think so,*" said Hadley. Every one else seemed delighted with our adoption of what they considered the bolder and more sportsmanlike policy.

Relentless events were to prove this decision my most serious error of the whole expedition.

# CHAPTER V

## THE KARLUK IN FETTERS OF ICE

IT was several hours after we left Cross Island that the ship came quietly to rest against a big floe. As Bartlett came down from the masthead he said to me that now the ship was where she ought to be and that we would wait here until the ice slackened out. That was what it was supposed to do on the theory selected, and Bartlett always took the most cheerful view possible of any situation. He had already given orders to have the ship tied to the cake by an ice anchor, and was in the best of spirits. It was Hadley's forebodings that worried me.

I had not been just then at the masthead with Bartlett where, from a hundred-foot vantage, a truer idea of the water between the floes can be gained. From the bridge the ice all around looked pretty tight and I imagined we must have come to a halt only because no open water had been visible ahead. I learned from Bartlett later that open water had been visible. He had, however, decided that since we were twenty miles from shore this was the strategic position in which to wait, again according to the adopted theory.

What we saw from the masthead next morning was not reassuring. The evening before there had been around us perhaps half a mile of open water, but now the ice cakes had gradually edged in until our hole was not much more than two hundred yards wide. After a survey of the horizon Bartlett ordered the ship freed from her moorings and we steamed across the two hundred yards, bunting ineffectively against the ice on the other side. After one or two bunts, which could not have been very heavy inasmuch as we had no room to back away for a good charge, the *Karluk* was tied up again. She never moved of her own volition after.

During the next day or two the ice kept gradually pressing tighter, huddling together more closely. At first the cakes lay flat, but gradually the increasing pressure made some of them rise on edge. Those next the ship were pressed against her sides till she groaned and quivered with the strain. In a day or two nearly every little hole between the ice masses was filled with débris by the crushing of the floe edges under pressure, for to the south and east, far away and invisible, the land was holding, while from the northwest the wind was blowing upon a million pieces of ice stuck on edge as upon a million square sails, till each piece strove like a full-rigged ship to move before the wind. But none could move except by crushing or pressing up on edge the cake that lay in its way. The pressure in the aggregate was near to infinite. To the square foot it was great enough to break the *Karluk* or a ship far stronger—strong enough to break any ship built. It would have crushed us had we not been protected by being in a pocket among especially strong adjacent floes.

Drifting in the pack is a tense game. In the beginning you have a certain amount of discretion in choosing your berth. After that it is luck upon which the life of your ship depends. And luck may change at any time.

A day or two after we were beset it began to freeze. In four or five days young ice had formed in every little open space where irregular strong floes did not fit exactly against each other. You could walk about anywhere without much danger of breaking through. The wind had been northwesterly, and for a time we kept drifting eastward until we found ourselves in Camden Bay, fifteen or twenty miles offshore. Then the wind changed and we began a drift westward.

By this time I had made up my mind that the *Karluk* was not to move under her own power again, and that we were in for a voyage such as that of the *Jeannette* or the *Fram*, drifting for years, if we had the luck to remain unbroken, eventually coming out somewhere towards the Atlantic, either we or our wreckage.

Among the things to be concerned about was that we had on board several men who had no business to be there. James Murray was one. He was about forty-six, a little older than the age preferable for such work, although I have in the Arctic been associated with men of even sixty who did their part and stood the work better than many younger men. One of my main concerns from the beginning had been oceanography, and Murray's department interested me greatly. Impelled by the double desire of keeping him safe and of gaining the greatest possible oceanographical information, I had decided to put him in command of the *Mary Sachs*. Our oceanographical equipment was all on the *Karluk*, and it was to have been the task of Murray and Mackay between Nome and Herschel Island to separate it into two divisions. Some was to be left on the *Karluk* under the charge of Mackay, while Murray was to have taken much of it and transferred it at Herschel Island to the *Sachs*.

My plan was that, with Murray in command of her, the *Sachs* should act in a measure as a tender, carrying supplies for Dr. Anderson towards Coronation Gulf or doing similar errands for Bartlett and the *Karluk*, if that became necessary. She was to hold herself ready to help wherever needed. In her spare time, which I hoped would be considerable, the *Sachs* was to cruise about in the triangle between Herschel Island, Coronation Gulf and Cape Kellett, venturing as far as she cared northwestward into the Beaufort Sea, but always keeping in this comparatively ice-free district. For although she was seaworthy and staunch in every other way, she was incapacitated for too close contact with the ice through having two propellers. An unexpected increase of cargo at Nome had compelled us to buy the *Sachs*, in spite of the twin-propeller drawback, as the only craft available. This increase of cargo was due to my yielding to certain members of our staff who thought they would need certain provisions and equipment I had planned to dispense with.

When a ship has a single propeller located amidships, aft, the passage of her body through the ice shoves it away and keeps a clear path for the propeller. But with the twin screw arrangement the propellers stick out at the sides aft in such a way that when the ship forces her way through ice she does not make a road wide enough, and the propellers will strike the cakes that have slid back past her sides. There is a good deal of ice in the spring in the southeastern Beaufort Sea, and in some years peculiar wind conditions will keep it there at all seasons, but often this region in which I expected the *Sachs* to be employed is quite ice-free after the early spring is over.

Besides Murray, McKinlay too should have been elsewhere. If he were to be on the *Karluk* he should, of course, have had with him all his magnetic equipment, some of which was now on the *Alaska*. Most inappropriate of all was the presence of the two anthropologists, Beuchat and Jenness. They had been taken aboard because the *Karluk* was not only the safest but the swiftest conveyance for Herschel Island. Murray was to land there with his equipment to wait for the *Mary Sachs*, and Beuchat and Jenness to study the Eskimos, not only for what information they could put on record, but also for the value to themselves of becoming quickly used to the ways and, if possible, to the language of the natives. Their equipment was naturally most of it aboard the *Alaska.*

When I realized how close we were to the land in Camden Bay I attempted to put Beuchat and Jenness ashore. No attempt was made to land Murray because his equipment was too heavy, or McKinlay because he had enough magnetic gear with him to be useful on the *Karluk* and too much for easy transportation ashore. We got out to the skin-boat, hitched up a team of dogs, put a certain amount of equipment into the boats, and detailed two Eskimos to accompany them. It is probable that had the party left with almost no equipment they could have reached shore, but what we tried to have them take proved too much of a load, and after getting a mile or two away from the ship they had to return. New ice had formed between the old cakes so that the boat could not be used as a boat, yet this new ice was not strong enough to support it when hauled on a sledge. The sledge kept breaking through, and the men also broke through, occasionally getting wet. I was sorry that the attempt miscarried, and later events deepened the regret.

After this we stayed quietly aboard the ship while she drifted. When the wind turned northeast I knew from long experience, although we were too far from land to see, that there must be a good deal of open water between the ice and the land. It seems illogical when you look at the map, but it is a fact, attested by universal observation between Point Barrow and Herschel Island, that although a west wind there blows off the land it brings the ice in to the land; and although an east wind blows off the ice, still it commonly carries the ice away from shore enough to leave handsome room for ships to pass east and west along the coast. We learned later that this reasoning held for our case, and that while we were drifting helplessly westward, the *Belvedere* and other ships were passing along the coast eastward, finding no obstruction. One of them saw our smoke although we did not see theirs, the reason being that their smoke was imperceptible against the dark land, while ours was conspicuous out in the gray of the ice.

The open water inshore became wider, and we began to see it from the masthead. Then it came within three or four miles and could be seen from the bridge. And here we were, frozen into a westward-drifting floe, while just inshore of us was free and placid water through which any ship could travel at will. The only comfort was to remember that the *Alaska* and *Sachs,* if they had stuck to the vicinity of land, would be safe now somewhere in this inside lane, working their way eastward. These reflections corresponded to the facts as we learned them later.

It was on the thirteenth of August that we tied up to the ice to move no more under our own power, and by the middle of September we seemed to have stopped moving at all. As we drifted west we had been edging nearer to land, until finally we got inside the line of Cape Halkett into Harrison Bay, and were set fast off the mouth of the Colville River, not far to seaward from where we had gone temporarily aground about a month before.

After we had been motionless for more than a week both Bartlett and I came to the opinion that we were likely not to move again before the next summer.* If it proved an ordinary winter we expected to remain safely embedded in that part of the sea ice which is frozen to the land—the floe edge, or the meeting-place of the landfast ice and the moving sea pack, being to seaward of us. We realized, however, that with a very bad gale a floe line between the ship and the land might possibly be established.

I have pointed out before that with east winds the ice on the northeast coast of Alaska, contrary to what might be expected, will move away from land. This is true only with mild winds and is not true with these if they persist a long time. A real gale or a strong breeze of long duration will bring the ice back in, and cause pressure likely to crush any ship that is ice-embedded. But a west wind, although blowing off the land will set the sea pack grinding eastward along the edge of the land floe.

We thought, therefore, that any of the following things might happen: First, with a mild east wind the ice would break outside the *Karluk* and move westward offshore, leaving her unmoved and unconcerned. Second, the east wind might persist for a long time or develop into a strong gale; in which case the ice that had temporarily gone abroad would come in against the shore ice, crumpling it up into pressure-ridges, crushing the ship or failing to crush her exactly according to luck. Third, a light west wind might break the ice outside, leaving her again unaffected; or, Fourth, if it were a strong gale it might carry her to the eastward, grinding along in the pack, leaving her afloat or sinking her, again according to fortune. What seemed clear to both Bartlett and me was that nothing could be done except to make preparations for taking the men safely ashore in case of wreck; and we thought that if any party were to go ashore temporarily they could always get back to the *Karluk,* for they would find her either just where they left her or to the east. It did not occur to us that she could be carried off, unbroken, far to the westward.

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* See "Last Voyage of the *Karluk*," by R. A. Bartlett and Ralph T. Hale, Boston, 1916, p. 35 ff.

The consultations between Bartlett and me resulted in the conclusion that a hunting party should be sent ashore. We had an abundance of provisions, but no fresh meat. There were some seals to be had around the ship, but the men wanted "variety" in fresh meat and especially they wanted the delectable meat of the caribou. In earlier years I had hunted caribou on the mainland just east of the Colville River and I knew from experience that it was good game country.

A logical thing might seem to have been to send the Eskimos to hunt, for the popular supposition is that you cannot be an Eskimo without being a good hunter. The fact is, however, that in a large part of Alaska caribou hunting is a lost art, for caribou have been nearly or quite extinct from portions of that territory for more than a generation. Our two Point Hope men had never seen a caribou in their lives, though they were good seal and walrus hunters. Kataktovik had hunted caribou a little but confessed he did not know much about it. Kurraluk was a good hunter, for he was of the appropriate temperament. Although he belonged to the Kuvugmiut of Kotzebue Sound who have, since the disappearance of the caribou from that region, become mainly a fishing and sealing people, he had spent enough time in the interior with other tribes to become proficient in caribou hunting. But he was a stranger to this district. I was aware that his wife, Keruk, knew every creek and cove in it, for I had first met her on my caribou hunts in the Colville delta in 1909. But we could not afford to let her ashore, for she was our only seamstress and the most important person aboard. We had hundreds of reindeer skins and other skin material that needed to be made up into warm clothing. It had been my purpose to engage several seamstresses either at Herschel Island or Cape Bathurst, but our sticking fast in the ice had settled all that. Now all our garments had to be made by this one Eskimo woman and by those of our staff or crew who might be able to learn from her. Several of the men eventually acquired a degree of proficiency.

Captain Bartlett volunteered to lead a party ashore, but he was under the handicap of not knowing the country, whereas I had the advantage of having hunted through it and of knowing the places where native villages might be found. This was important, for it was part of my desire to communicate with Eskimos and try to get two or three families to move aboard for the sake of the seamstresses. One of the customary village sites, that at the mouth of the Itkilik River, is usually well stocked with fish, and I had the further purpose of purchasing there and possibly setting our own fishermen to work.

It was part of the plan of going ashore to take Jenness along to give him a chance to begin his study of the Eskimos, while McConnell and Wilkins were chosen because they were among the most adaptable of the men and I thought would readily take to the life of arctic hunters. I had already formed an opinion of Wilkins, which was continually strengthened, that he would be able to adapt himself to anything. As for McConnell, he was an exception to the general rule of my men. The rest were inclined to follow storybook ideas, in assuming that the Eskimos only could hunt big sea game successfully. They devoted themselves to their fowling-pieces when ducks were flying over, or to ski-jumping and playing other games around the ship, while the Eskimos did the useful work of securing seals for man and dog food. McConnell hadn't had any luck so far, but he had at least avoided the games and the fowling-pieces and had gone out trying to get seals.

## CHAPTER VI

### THE KARLUK DISAPPEARS

WHEN our hunting party left the ship we expected to be absent from it only a week or two.* We had already made up our minds as to which were the best dogs, and we took instead of them two teams of untried and presumably poor dogs, with the idea of testing these out. We had ten or eleven good new sledges and chose two old and comparatively poor ones, believing we had better not expose the sledges intended for ice exploration to chance injury. Wilkins, whose work and pleasure alike was photography, left all his equipment on the ship except the lightest camera. I had a specially good rifle, presented to me by the Harvard Travelers Club of Boston, which I had promised to use on all important trips. I left this rifle aboard and took an ordinary one. Two or three weeks earlier, when the creaking of the ship had led me to think we might have to leave her at any moment, I had put thirteen hundred dollars of paper money into my hip pocket so as not to forget it in an emergency. Now I took this out of my pocket and put it into the strong box in my cabin, along with more than a hundred pounds in weight of silver and gold money which we carried for trade with the Alaska and Herschel Island Eskimos.

It was about ten miles ashore. We did not go the whole distance the first day (September 20), partly because we did not start till the afternoon, partly because there was no hurry, and in a measure because the young ice between the old ice floes was still treacherous and had to be dealt with carefully. In addition to the white men I had taken along the Point Hope Eskimos, Asatsiak and Pauyurak.

Camp was made in two tents, three men in one, and myself with the two Eskimos in the other. I had made such camps hundreds of times so that to me it was scarcely an event, but it interested me because it gave me my first idea of how my traveling companions were going to take to what to them was a new sort of life. Here I quote from a magazine article written by Wilkins:

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* See "Last Voyage of the *Karluk*," p. 36.

The first night on the ice was a new experience. We were shown how to pitch the tent and set out the floor skins and sleeping-bags in the Eskimo manner. According to correct methods, approved by Mr. Stefansson, we took off all our clothes to sleep naked in our sleeping-bags of reindeer skins. We did not question the advisability of this, apart from the natural disinclination to undress in a temperature of 20° of frost, for we had been accustomed normally to undress when going to bed. We three novices slept in a tent together, while Mr. Stefansson and the Eskimos occupied the other. He came in, tucked up our sleeping bags, and gave us advice about keeping them folded about our shoulders. This we scarcely heeded, thinking that we knew how it should be done. But soon, even before we had finished comparing notes for the day, we felt the cold air creeping round our ears and spreading down our bags. A strong breeze had sprung up and it filtered through the tent. We twisted and turned and complained of the cold and thought we had proved one of the Commander's theories to be a fallacy. It was all very well, we thought, for Eskimos to sleep naked if they wanted to, but we were more tenderly reared and needed more protection. It was only the dread of greater cold that prevented us from getting up, putting on our clothes and going to bed fully dressed. We didn't for a moment realize that it was our own incompetence that caused us the discomfort. But after a few days' perseverance we learned to fold our sleeping-bags around our necks and were generally comfortable, and we eventually got to the point where we no longer wanted to get into our bags with all our clothes on."

The next day we got ashore, not indeed on the mainland, but on Amauliktok, the westernmost of the Jones Islands, a chain that lies about four miles off the coast. Inside this island chain we found the ice young and rotten, so that crossing to the mainland was not practicable and we camped for the night, using for cooking and warmth our sheet-iron stove, and driftwood which in this district is abundant.

The name of this sandspit is typical in the sense that an Eskimo place name is frequently found, when translated literally into English, to be the equivalent not of a word but rather of a sentence of ours. Thus *amauliktok* means "he killed a Pacific eider." If the meaning had been "he killed a King eider" it would have been "Kingaliktok" which (still more literally translated) means "he killed one with a big nose."

During the evening I decided it would be desirable to have some additional things from the ship. I had given Captain Bartlett directions that a few days after my leaving he was to send another party ashore in the direction of Cape Halkett, and it now occurred to me to modify these instructions so as to bring the men ashore sooner. Accordingly, McConnell and one of the Eskimos were chosen to go with a light sled the following morning out to fetch the required gear and carry the supplementary instructions.

We were all up early. During breakfast I impressed certain elementary principles on McConnell, urging him also, although he was in command, to follow the advice of the Eskimo if any emergency were to arise. After breakfast while the sledge was being hitched I took a walk along the beach, climbing upon a small knoll to get a view to seaward.

What I saw was very disquieting. A strong wind had been blowing during the night and the temperature was warmer. To seaward the darkness and blotchiness of the clouds showed that the ice was broken where yesterday it had been continuous, with water reflected in the sky, and clouds of dark vapor rising from the leads. It was evidently unsafe to send McConnell on his errand, and during the next two or three hours conditions got so much worse that it dawned on me we were now going to have a test of what would happen to the *Karluk* if the ice broke up.

Now the gale increased until it became the worst storm for that season which I have ever seen in the North, and this opinion I found was confirmed by the whalers who, unknown to us, were then having their own tussle with the ice some distance to the east. We built out of driftwood a sort of observation tower and occasionally got glimpses of the *Karluk*, but most of the time she was hidden by snow squalls and drifting clouds of mist. In the afternoon I was scarcely willing to believe my own eyes when I saw her moving to the eastward—against the wind, against the current, and against any theory which I could formulate except the one that she had broken loose and was proceeding under steam. The glimpses of her, too, were so fleeting and she was so veiled by fog that I was not even sure that it might not have been a cake of ice that I mistook for her. What I was sure of was that the thing was moving eastward. That was clear because it passed behind nearer ice cakes which I knew to be stationary.

This was a night of high tension, although free from that deepest of uncomfortable feelings that what was happening could have been prevented. For a month now I had been committed, if not reconciled, to the attitude that so far as anything we could do was concerned the *Karluk* was at the mercy of the ordinary forces of nature and of the laws of chance, at least until the coming spring.

On the morrow the question of what to do could scarcely trouble us, for there was but one road open. Or rather no road, for the wind had broken the strong ice offshore, the warm temperature had rotted the young ice of the lagoon, and we were marooned on the island. Of course this would be only a question of a few days, for at this time of year a warm spell must be temporary.

So it proved. In two or three days the lagoon ice hardened between us and the land, although to the westward it was still too weak for travel. When it cleared to seaward the *Karluk* was gone; we did not know whither, or whether she still survived. There was no sense in searching for her by sled, for there was vastly more water than ice, so we went on to the mainland.

That night we camped by a platform cache made by my own party in the fall of 1908 when we had killed thirteen caribou at this point.* The next day I hunted alone, leaving the men in camp because the weather was thick and uncertain and I did not care to take the chance of their getting lost in the open. All day the walk was without promise, but towards evening I saw a single bull caribou. He was traveling too fast for me, however, for though I gradually got nearer to him, darkness overtook me and I had to suspend the chase.

As it happened, I did not resume it next morning. The frost had sharpened and it appeared possible to start west along the coast, for I thought that to be the best chance of overtaking the *Karluk*. It was possible she might have freed herself and steamed eastward, but the chances were that the ice holding her had followed the coast towards Barrow.

At first we had to travel very cautiously, for the ice proved treacherous on account of a light blanket of snow which kept it from freezing hard. On the second evening on the west side of the bay at a point southeast of Halkett we had a rather narrow escape from a serious mishap, for in the attempt to make shore that evening we had traveled into the night, and found ourselves on ice that owing to its extreme thinness and mushiness had upon it black patches of damp snow. It was partly a matter of luck that we did make shore without losing sledges or lives.

The next day we were traveling along in the general direction of Halkett when one of the Eskimos said he could smell smoke. None of the rest of us could, but I was willing to rely on the Eskimo, for my experience is that while in eyesight, hearing and every other natural faculty he is about the same as the rest of us, he does seem to excel in the sense of smell. Whether this is from some anatomical or deep physiological cause I do not know, or whether it results merely from his having lived his whole life in an unvitiated atmosphere with the sense of smell consequently unperverted. In the direction from which the smoke must come, if it was smoke, land was about eight miles away. I climbed on one of the sledges, examined the coast with my field glasses, and saw what afterwards proved to be a house, but was now so low and far away that it could not be identified. We traveled towards it, however, and after five or six miles its character as a human habitation became clear.

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*See "My Life With the Eskimo," p. 64.

It was the dwelling of a single Eskimo family of the Colville River people. They were able to tell us about several other families, most of them old acquaintances of mine, that were scattered in various places in the vicinity. Through previous residence in the country I knew the Eskimo names not only of the places I had visited, but also of many which I had heard discussed and which had been described to me by the drawing of crude maps. Had I been a stranger to the topography and to the Eskimo names I should have been unable to form a clear idea of where all these people were living, even with the aid of the most modern published maps and with a thorough command of the Eskimo language; for besides being inaccurate, most maps carry only the names of European explorers, patrons of exploration, or friends of the mapmakers. The places and names shown on such maps are unidentifiable through any information available from Eskimos, and commonly even from resident whites. To have full value to the traveler an Arctic map should carry Eskimo names, either exclusively or as supplements to the others.

I must pay a tribute to the adaptability of my companions. On the *Karluk* all of them had disliked the seal meat prepared for us by the ship's cook, who insisted on putting it through various elaborate processes which were supposed to deodorize it and take away its peculiar taste. I had imagined my own dislike for seal meat cooked this way to be a peculiarity due to long acquaintance with the undisguised article. The men all ate it on shipboard with so good a grace that I really thought they liked it. But when we killed the first seal after leaving the ship, cut its meat into pieces, dropped it into cold water, brought it to a boil and served it underdone on a platter in the true Eskimo style, every one of my three companions commented on its great superiority over seal meat as cooked on the ship. Wilkins, who was brought up in Australia and was used to the eating of fresh mutton, said it tasted very much like mutton and almost as good. That seal's fat does taste like fresh mutton fat is the opinion of all white men I know who are familiar with the taste of both. The lean, however, while good in its way, has a flavor quite distinct from that of mutton.

There may be a more fundamental reason why a man used to an elaborate menu, as were all my present companions, is easier to please than one who has never eaten any but a few simple things. Since many of the modern theories in human dietetics are based on experiments with rats or guinea pigs, analogizing from dogs to men in this field should be no less interesting or instructive. I should like to cite some of our experiences in feeding dogs with foods that were strange to them.

In 1908 on my way down the Mackenzie River I bought a dog team which had been brought up on a diet of fresh-water fish supplemented with moose, caribou, rabbits and possibly ptarmigan. When we got to the seacoast we had trouble to get these dogs to eat seal meat. I remember some sailors who told me at the time that they did not blame the dogs. These were men who had been in the country twenty years without ever tasting seal and who naturally knew it was bad. But it was not that seal was fundamentally less agreeable to dogs; they were merely not used to it. It occurred to me that the dogs were refusing to eat because of the odor of the meat rather than because of the taste. For one thing, they did not put it in their mouths; for another, a dog probably does not have a keen sense of taste, as we may infer from his habit of gulping his food, but his keenness of smell is well known. I now provided seal meat that was more or less decayed, thinking that while fresh caribou and fresh seal smelled different, the putrefaction odor in either case would be about the same and would overpower the native smell. This worked at once. And I have never found a dog used to putrid meat of one kind that would not eat greedily putrid meat of any other kind. By gradually giving the dogs fresher and fresher seal they were easily broken to it.

But we had more serious trouble with the same team the following spring when we tried to feed them on ducks. These ducks were fresh-killed, hence had their native odor. All the team refused at first, and some went for more than a week without tasting. I determined experimentally, however, that through hanging in the sun for three or four days, or until it began to smell putrid, a duck became acceptable to any of the dogs.

Some years later I bought a dog in Coronation Gulf which had been brought up mainly on seal. On the north coast of Alaska the following spring we were for a few days in a position where we could get only geese for food. This dog refused for more than a week to taste goose, and I was never able to force him to it. We had to give up the experiment because of lack of time. As noted below in the case of the wolf meat, it is even possible the dog might have preferred to die of starvation though goose meat was before him.

At another time we had a dog brought up on the Booth Islands, near Cape Parry. Inland on Horton River this dog, which had been used to seal meat only, refused at first to eat caribou and had to be broken to it through hunger, for this was in the winter time when it was not practicable to get the meat to decay.

In Banks Island the summer of 1914 we undertook to teach the dogs to eat wolf. This experiment was conducted "under laboratory conditions." The dogs were kept tied in one place and supplied each day with a dish of fresh water. A piece of wolf meat was placed every day beside the dish and allowed to remain all that day. This meat was then destroyed, for we were afraid it might begin to putrefy and we wanted to see how long the team would go hungry before eating meat that was quite fresh and still retained the full wolf odor. During the second week five of the six dogs gave in one by one, but at the end of the fourteenth day the last dog had not yet touched it. He was the oldest of the team, which was doubtless why he was the most conservative. He had been the fattest of the lot at the beginning of the experiment and at the end of the second week he was practically a skeleton.

At this point I had to stop the test, for we had to begin traveling and needed the strength of this dog along with that of the others. It is quite possible that he might have chosen to starve. I have found by experience as well as inquiry that a man fasting does not get any hungrier after the second, some say the third, day, and long before the fourteenth day the craving for food loses its sharpest edge.

This is a synopsis of only some of my experiments and experiences with the food tastes of dogs, from which I have drawn the following generalized conclusions:

Dogs brought up around ships and used to foraging in refuse-piles and eating highly-seasoned food will eat any food offered to them. It seems therefore that a dog used to many sorts does not mind eating one sort more.

Dogs more than a year old brought up on a diet restricted to two or three articles always refuse at first when an entirely new food is offered. They base this refusal on the sense of smell, and if the meat is putrid enough so that the putrefaction smell completely hides the native smell then the dog has no objection. In other words, all rotten meats smell substantially alike and are therefore recognized as a familiar diet, while any new kind of fresh meat offends through its strange smell.

Hunters and natives who have noticed that dogs will not eat wolf or fox meat commonly remark that dogs object to cannibalism. I find that the objection of a dog to wolf meat is no stronger than his objection to duck meat or caribou meat, provided the duck or caribou is an absolutely new meat in the experience of the dog. Once induced to eat wolf, a dog soon becomes as fond of it as of any other meat.

We have found that the food prejudice is stronger the older the dog, and we believe that with dogs of the same age the prejudice of the female against new food is stronger than that of the male. This seems to extend the commonly believed-in principle of the greater conservatism of human females down into the lower animals.

It would be exceedingly interesting, it seems to me, to make further experiments in the food tastes of dogs along the following lines:

Pups of the same litter should be selected, one to be fed for two years on mutton and water, another on fish and water, a third on beef, and a fourth perhaps on a vegetarian diet. It would make the experiment more interesting if a male and a female could be used for each sort of diet. Judging from our experiments, it seems probable that at the end of two years the mutton-fed dog would refuse both beef and fish, and the fish-fed dog would refuse both mutton and beef. I believe it would also be found that the abhorrence for the new diet would be stronger with the female in each pair than with the male.

It is well known that some Eskimo groups eat either no vegetable food at all or practically none. But in all parts where we have been, except in Coronation Gulf, they are fond of the berry known in Alaska as the "salmon berry" and elsewhere as the cloudberry (*Rubus chamaemorus Linn.*). We were astonished, especially my Alaska Eskimo companions, when we found that some of the Coronation Gulf Eskimos lived among an abundance of these berries and had never thought of tasting them. Since no taboo existed my

Eskimo companions tried to introduce the fashion of eating them. They found no difficulty in getting children to try them, except that in some cases the mothers were offended by the attempt. The men also were commonly willing to eat them, and I do not recall that even one man refused, but I should say that fully half the women positively refused even to taste the salmon berry during the summer we spent with them. This is really a rather good fruit and I have no doubt that by now most or all of the people are eating it, but our observation that first year seemed to indicate clearly enough the conservatism of the women. We observed it in many other things—for instance, smoking. Although nearly all western Eskimo women use tobacco and although there have been tobacco-using women on our ships when we have come in contact with the eastern Eskimos, we have found the men readier than the women to learn to smoke.

I have had much experience with the food prejudice of white men in connection with introducing them to a diet of meat only. The laws of that prejudice as deduced from dogs have applied to the men exactly. The older the man the more probable it is that he will object to trying a new kind of food and to abandoning the foods he is used to. A dog brought up on a ship and used to a variety in diet would take readily to a new diet. Similarly, "well brought-up" men, used in their homes to a variety of foods both domestic and imported, take readily to any new thing—such, for instance, as seal meat. But men "poorly brought-up" and used only to half a dozen or so articles in their regular diet, are generally reluctant to try a new food unless it has been represented to them in advance as a luxury or as especially delicious. Of course the situation here is not so simple as it is with dogs. For one thing, the man of "laborer" type has a feeling of being degraded when he is compelled to eat the food of "savages," while a man of intellectual type is appealed to by a mild flavor of adventure in experimenting with the food of a strange people.

It was so with my companions now that we were among real Eskimos. They took readily to Eskimo cooking and seemed to consider it great sport. Doughnuts fried in seal oil were sampled as an adventure, and their deliciousness surprised them. So with every new thing they had a chance to taste. This is one of the reasons why "well brought-up" young men are the best material for polar explorers, or indeed for any type of "roughing it," except the sort to which the "poorly brought-up" man is native. Generalizing still more: an educated man of diversified experience has the mental equipment to meet "hardship;" the ignorant are fitted to meet easily only those "hardships" that are native to them. It goes without saying that, like all rules, this has its exceptions.

## CHAPTER VII

### NEWS AND PLANS

WE had noticed in certain places along the coast sledge tracks going west ahead of us. The Eskimos said that the travelers were a party consisting of one white man and three Eskimos who had left a whaler caught by the ice and compelled to winter to the eastward, and were on their way to Point Barrow.

Group after group of Eskimos happened in our way along the coast, and we picked up a good deal of information about conditions to the east as the party traveling ahead dropped a word here and another there. But it was not until we finally got to Cape Smythe that everything was pieced together.

The *Belvedere*, under Captain Cottle, carrying a hundred tons of freight for our expedition, had been able to get within about seventy-five miles of Herschel Island, where she had been frozen in a mile from the coast. About fifteen miles farther west the *Polar Bear* was safe a few hundred yards from the beach. But the *Elvira* had been wrecked. This was not surprising for the *Elvira* was one of the vessels considered before the purchase of the *Karluk* and the reports of my inspectors had shown that she was thoroughly unsound. Even in the ice-free waters of the Pacific they would not believe her good for more than two or three years. She had now been nipped in the ice, and according to the terms of the insurance policy, which was a heavy one, she had been promptly abandoned. Whalers from another vessel later boarded her and saved her catch of fur and a good many other things of value. Thus the event was auspicious to everybody except possibly to the marine insurance people at San Francisco.

But most pertinent to us was the information that the *Alaska* and the *Mary Sachs* were both safe at Collinson Point. They, in common with all other ships on the coast, had followed the Alaska practice of going between the land and the ice. Although they had not been able to get as far east as we had hoped, they were at least safe, and we had their supplies to go on with the following year.

It was especially unfortunate for us that to the *Karluk*, believed safest of all our ships, we had entrusted the most valued part of our cargo. One of the main things I wanted to do that next spring on the sledge journey over the Beaufort Sea was to take soundings, and most of our sounding equipment was on the *Karluk*. The *Sachs* and *Alaska* had chronometers for their own use, but the ones intended for sledge exploration were on the *Karluk*. The men of adventurous disposition and special qualifications whom I had meant for my companions on exploratory journeys were also there, along with the good dogs purchased in Nome, and the sledges and sledge material which could not be duplicated even at Cape Smythe and even in Mr. Brower's extensive stock.

And of the *Karluk* with all these invaluable things on board we got no certain news. On coming to an Eskimo encampment at Cooper's Island about twenty miles east of Cape Smythe we learned that a ship had been there in the ice, three or four miles offshore, for several days.* She had been so near that the Eskimos could see the ropes in her rigging, and had theirs been an ordinary party they would have gone out to her. But they were some decrepit old people who had been left behind by their relatives traveling eastward who were coming back later to pick them up. These Eskimos had been expecting somebody to come ashore from the ship. When nobody came and they never saw any smoke, they concluded she was deserted. It had been a strong temptation to them to go aboard for plunder, and it was a matter of great regret to them that no young men had been on hand for the purpose. One of these old Eskimos had seen every whaling ship in these waters, and the *Karluk* had been a familiar sight to him for fifteen years. He was prompt and clear on the point that this was she. After she had been within observation for two or three days a fog and wind came up. When the fog lifted she was gone.

A day or two later a ship had been seen in the ice off Point Barrow. She was said to have been about ten miles from shore and the natives did not agree as to her characteristics. One Eskimo said she was a schooner; in that case certainly not the *Karluk*. By the light of later events I now know that it must have been the *Karluk*, though at that time I was inclined to think it was the *Elvira*. Report at this stage was that the *Elvira* had been abandoned before she sank, so that it seemed she might have drifted westward, jammed in the ice and held up by it, a thing which occurs in shipwrecks of a certain type.

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*See "Last Voyage of the *Karluk*," p. 48.

Mr. Brower's welcome when we arrived at Barrow was no less friendly because he regretted our being back so soon under such circumstances. He is an optimist by temperament, as every pioneer should be, and his cheerfulness and friendliness helped to reconcile me to the situation. By now I was completely over the idea that the expedition was going to be uninteresting because of being too easy, or monotonous because of having some one to do everything for me.

After a day or two at Cape Smythe we set about preparing the best sort of outfit we could. My men on leaving the *Karluk* had been improperly dressed and this was now remedied through skins and other things supplied us from Mr. Brower's stores and through the assistance of the Eskimo seamstresses of the village. The one thing we wanted most, however, was good sledges, for I knew that at Collinson Point there would not be more than one or two of the heavy type. It takes an entirely different sled to encounter the rough and shifting ice on the Beaufort Sea from what is needed for work on shore. It had been my supposition that the *Alaska* and the *Mary Sachs* would in winter confine their operations to the land or to the comparatively level ice near land and would, therefore, need sledges weighing from seventy-five to a hundred and seventy-five pounds, and they had, accordingly, been equipped with light ones mainly. The kind that I preferred for rough ice work would weigh two hundred to two hundred and seventy-five pounds. With a sledge of that weight Mr. Brower could not supply me, but he had light material for making just one sled and he set about doing that. He made it himself and it was, therefore, as well made as was possible with the materials. It eventually gave us as good service as any sled I ever had of its weight, though it never could take the place of any one of the heavy sledges carried by the *Karluk*.

Although it is three hundred miles north of the arctic circle and within sight of the most northerly tip of Alaska, Cape Smythe had at that time three mails going to the outside world in winter. The first of these was leaving in November, and with it I sent out to the Government at Ottawa a report of the proceedings and mishaps of the expedition up to that point and a program for future work. This letter is summarized as follows:

I told the Minister of Naval Service that I considered it very doubtful whether the *Karluk* as a ship would survive the winter. I could not be sure in what part of the ocean she was, although inclined to the belief that she was to the westward. While the program of the expedition was necessarily curtailed, I did not consider that the lives of any of the crew were in danger,* for if the ship were crushed during the winter the breaking would be so slow that they would have plenty of time to put off on the ice all stores and equipment necessary for a journey ashore. I placed special faith in the skin-boat and pointed out that the greatest difficulty of the men of the crushed *Jeannette* in getting ashore was due to the fact that the boats they had to haul over the ice were very heavy and very fragile,** while our skin-boat was less than one-quarter as heavy and many times as strong, and in every way better adapted to the use of men retreating towards land from a ship broken in the pack. If the ship were lost in the dead of winter it would probably be safe to leave without the skin-boat. In other words, there were two safe methods of retreat: one carrying the boat along, and the other abandoning it and going directly ashore with sledges, providing the break-up came when frost was severe enough for temporary breaks in the thick old ice to be quickly mended by the formation of young ice. Should the ship survive the winter and be broken up the following summer, the danger to the lives of the crew would be considerably increased. The ice then is more mobile, stores placed upon it are more likely to be lost, and the journey ashore would involve frequent launchings of the boat into water and pulling it out again for crossing ice floes to the next stretch of open water.

Regarding the prospects of the *Karluk* in general, then, I gave it as my opinion that she might or might not survive, but that the crew would be certain to get safely ashore if the wreck took place in winter, and would have a good chance of getting ashore even if it took place the coming summer. I mentioned that the eastern part of the north coast of Asia is well supplied with food, for it is a settled country with hospitable and well-provisioned reindeer-herding or walrus-hunting natives and white traders scattered everywhere. If the *Karluk* were broken to the west of Barrow her crew had this hospitable coast for retreat.

As a prospectus of the coming season I reported the safety of the *Alaska* and *Mary Sachs* at Collinson Point. After outfitting at Cape Smythe I would proceed eastward by sledge along the coast. Alfred Hopson, a boy of sixteen or seventeen brought up at Cape

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*Bartlett, aboard the *Karluk,* had the same feeling. "I felt sure, come what might, we would get back in safety to civilization," he wrote two years later, in recording his feelings while drifting in the ice. ("Last Voyage of the *Karluk,*" p. 50.)

**"Voyage of the *Jeannette,*" by Emma de Long, Boston, 1883. See numerous references.

Smythe, with a good command both of Eskimo and English, had been engaged as interpreter for Jenness. I would leave Jenness with Hopson among the Eskimos near Cape Halkett where he would put in the winter acquiring a familiarity with the language and lives of the Eskimos. With the rest of the party I would proceed east to Collinson Point.

As to the expedition's southern section the plan had been that it was to spend the present winter in Coronation Gulf and survey in the spring the land in that vicinity. This was now impossible, since Coronation Gulf is seven hundred miles east from where they lay at Collinson Point. I thought it unwise and unprofitable to keep an expedition as large as that of the *Alaska* idle a whole season simply because they were not in the particular district of my original plan. I would therefore make out a program for them on the following basis:

The Mackenzie delta was interesting geographically and important in its commercial possibilities. And it was accessible from Collinson Point, being only two hundred miles east. I had myself made two journeys the full 2,000-mile length of the Athabasca and Mackenzie River system from Edmonton to the Arctic Ocean, and they had impressed on me the tremendous potentialities of this system as a waterway, should commerce for any reason develop. I had journeyed up the Yukon by steamer and had found that the steamers grounded on sandbars frequently, although the pilotage was expert, the channels were well buoyed, and the ships drew only four and a half feet of water. On the Mackenzie, with no buoys for the channels, with pilotage not so expert and with a boat drawing six and a half feet of water, we had navigated without difficulty an approximate distance of thirteen hundred miles—from Smith Rapids on the Slave River, which is the only serious obstacle to navigation on the system, across Slave Lake and down the Mackenzie River to the head of the delta. Through the delta I had passed several times, commonly in boats of shallow draft, but once with a boat drawing about five feet. If we could survey the various channels of the delta and find that any had a depth of five feet or more all the way to the ocean, the knowledge might be of great importance. It would be so not only to the Hudson's Bay Company and other traders already in the quarter, but to the public in general should a strike of gold or oil or other commercial development ever bring people into that valley as they had been brought suddenly some years earlier into the Yukon valley.

So I gave it as my intention to go from Point Barrow myself to the Mackenzie delta to purchase dogs, hire Eskimos, buy gasoline launches if they were available, and otherwise make all preparations for extensive work in the delta by our topographers, Chipman and Cox, the following spring. The preliminary task of surveying the coast between the International Boundary and the mouth of the Mackenzie might be finished in March, so that work on the Mackenzie channels could be begun by sled before the river broke open, and continued by boat, including soundings, from about the end of May until July when the surveyors would proceed to Herschel Island to rejoin the *Alaska* on her way eastward towards Coronation Gulf.

But the main item of the instructions of the Government to the expedition had been that we were to explore the ocean north of Alaska and west of the already known Canadian islands to ascertain the presence or absence of new lands, and to do soundings and carry on other geographic and oceanographic work. I said that it seemed to me this part of our program could still be carried forward. Supplies to reinforce the outfits of the *Mary Sachs* and *Alaska* could be purchased either from the *Belvedere* or *Polar Bear*, or, should they be short as they might be, from the two traders, "Duffy" O'Connor and Martin Andreasen who were wintering on the coast between Collinson Point and Herschel Island. These supplies together with those on the *Alaska* and *Mary Sachs* would be adequate for carrying out next summer the *Alaska's* program of going east to Coronation Gulf, and the survey work for the Mackenzie in the spring. They would also provide a small party for a journey north over the ice to carry out our main geographic program.

The report then gave attention to what the expedition's program would be if next year the *Karluk* turned up safe, and what it would be if we had to carry on without her. In the latter event we would especially need some scientific instruments, and these I asked to have shipped to Herschel Island via Edmonton and the Mackenzie River, which is the earliest and safest route. Other important but less essential supplies not obtainable from whalers or traders I asked to have sent in by ship through Bering Straits to Herschel Island.

Summing up the report:

(1) With the resources we had or could get we intended to do as much work this year as we could.

(2) This year and the years following, whether the *Karluk* was lost or not, the expedition intended to try to carry on according to original plans, both in the Coronation Gulf district where detailed scientific studies would be pursued, and in the Beaufort Sea

and Parry archipelago where the main object was geographic discovery—the traversing and study of unexplored seas, the discovery and mapping of unknown lands, and the further survey of islands already partly known.

This report, mailed from Barrow in November, reached the Department of Naval Service in February. Independent reports and requisitions had also reached them from the station of Anderson's southern division at Collinson Point, which at the time they sent them had not heard (except through unreliable Eskimo rumors) from the *Karluk* or from me since the news of us they got when they followed us east around Barrow last August. The Naval Service also received a telegram from me sent later with the midwinter mail from Fort Macpherson. The Department replied to all these communications by sending the following telegram to the telegraph office nearest Herschel Island, distant about one month's rapid journey by dog sled:

Ottawa, 28th February, 1914.

"V. Stefansson,
Care of Superintendent J. D. Moodie,
Royal Northwest Mounted Police,
Dawson, Yukon.

"Your reports from Barrow and wire from Macpherson received. Your decision to pursue expedition as per orginal plans is approved. Trust you will soon have news of *Karluk*.

"(Signed) G. J. DESBARATS."

This was a satisfactory message, especially the sentence: "Your decision to pursue expedition as per original plan is approved."

Although this telegram was justified by the outcome, and now seems the only logical one that could have been sent, it represented at the time a decision by the Department of Naval Service which showed a realization of arctic problems, and a confidence in our prognosis of how they could be met under altered conditions not exactly reflected in the press. For while the Department were deciding to approve my plan of going ahead, the newspapers were saying that the entire complement of the *Karluk* had perished, that my plans were unsound, and that the expedition had failed. Editors especially, who presumably had been through high school, were asserting that all the knowledge ever gained in the Arctic was not worth the sacrifice of the life of one young Canadian.

I am one of those who think the fighting of the Great War worth while not so much to attain what was attained as to prevent what has been prevented. But I never could see how any one can extol the sacrifice of a million lives for political progress who condemns the sacrifice of a dozen lives for scientific progress. For the advance of science is but the advance of truth, and "The truth shall make you free."

As this book is going through the press I have received a letter from one of the scientific staff of our expedition who saw several of his companions die in the North, and then went home to serve four years on the western front to see men die by the thousand. Meantime some of us, his former colleagues, were carrying on the northern work. He is writing about a recent visit to him of one of our other men who remained in the North two years longer before going home to serve the last two years of the war. He says: "It was indeed a pleasure to learn at first hand of the work the expedition accomplished . . . and no less to hear of the men with whom I had had the honor to associate. My only regret has been, and always will be, that I was denied the honor of a more active association in these results. My enthusiasm for the study of polar problems has increased rather than diminished, and I should have been delighted to join Wilkins in his Antarctic venture * . . . but unfortunately the war has left me a legacy in the shape of a weak leg as the result of wounds, which incapacitates me for arctic field work." **

Thus men will always differ in their estimates, partly because of their nearness to or remoteness from the objective they judge; the soldier does not always agree with the editor. The battle for the advancement of knowledge is being nobly fought where doctors submit to malignant inoculations to test the efficacy of a serum, where experimenters breathe poisonous fumes through thousands of tests to perfect a process in economic chemistry, where astronomers spend sleepless nights photographing the spectra of the remote stars. And the astronomer is not necessarily the least of these because it is least obvious just how his discoveries are to be applied to the problems of food and raiment.

Nor are the principles established by the arctic explorer necessarily worthless because no one may see their commercial application, nor the lands he discovers valueless because corn will not thrive there and water frontages cannot be subdivided into city lots with prospect of immediate sale. Their time will come. "The

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* The Cope Antarctic Expedition of which our Wilkins became second-in-command after the end of the war. They sailed south in 1920.

** Letter to the author from William Laird McKinlay, dated May 27, 1920.

Far North" is a shifting term. The Romans considered the middle of France too frigid ever to support a high civilization. Fifty years ago the Arctic was supposed to stretch a long arm down to where now stands Winnipeg with its 200,000 people, and it was debated if potatoes could be successfully cultivated in that part of Saskatchewan which is now known to be nearly if not quite the world's greatest wheat country. So the "Far North" will continue retreating till the Arctic that is unpeopled with our race shall have shrunk far within the technical arctic circle as laid down by the mathematical astronomer and geodesist. The lands commonly supposed to be covered with ice are even now covered with grass; the "eternal silence" of the North exists only in books; the "vast arctic deserts where no living thing can flourish" are the abode of fat herds of indigenous grazing animals winter and summer—as you will see if you read on in this book.

The "Far West" is gone. But in the North is a greater frontier than the West ever was, stretching across Canada and across Siberia. The commercial value of the remotest arctic islands will be seen ere we die who now are young.

To those of broad outlook it needs no commercial development to justify polar exploration, or any honest attempt to widen the bounds of knowledge. Though we hope for commercial developments from the Canadian Arctic Expedition of 1913 to 1918, we need not await them for justification. More than a dozen volumes of scientific results are partly written (some of them are printed), and charts of new lands have been published as a result of the decision represented by the telegraphic order issued at Ottawa when to those of defeatist temperament everything looked black:

"Pursue expedition as per original plan."

# CHAPTER VIII

## THE JOURNEY TO COLLINSON POINT

WHILE at Barrow this time I observed that the average temperature of the Eskimo houses was lower than it had been with the Eskimos I had lived with farther east. Mr. Brower told me that when he first came to Barrow (I think about 1881) the Eskimo houses had been much warmer than now. The reasons for the difference were mainly two. The people had gradually changed their more comfortable and sanitary earth-and-wood houses for the nowadays more fashionable and flimsy frame buildings of imported lumber; and fuel had grown scarcer and more expensive.

Mr. Brower and others also gave information that the age of maturity of Eskimo women is on the average higher now than it was ten or twenty years ago. I made no connection at the time between the fact of the colder houses and the fact of the deferred maturity of the people who dwell in them, and so lost the invaluable opportunity of discussing the conclusion I later arrived at with Mr. Brower, who is an accurate observer, a keen reasoner and has had unequalled opportunities to study the Eskimos during their transition from their native mode of life which was unaltered when he settled among them to the present half-understood and often misapplied "civilization."

It has been generally supposed that among the peoples of the earth the age of maturity comes earliest in the tropics and increases gradually as one goes northward through the temperate and eventually to the edge of the polar zone. It has been presumed that a similar condition would be found in going south from the equator towards the southern pole.

If the age of maturity increases with fair regularity as one goes north through Europe from Sicily to Lapland, it would seem there is a direct connection with the decrease in temperature, and this assumption has accordingly been generally made. Tables, the sources of which are not always unassailable, have been published to show this direct connection between the age of maturity and the temperature.

But in North America this rule, if it be a rule, has a striking exception. It is not rare among Eskimo women that they have their first child at the age of twelve, and children born before the mothers were eleven have been reported in places where the age of the mother can be in no doubt because of the fact that her birth had been recorded by a resident missionary.

Cases of this sort were first called to my attention by Dr. H. R. Marsh,* a medical missionary of the Presbyterian Church, who had already been long resident at Barrow when I first came there in 1908. It is only where missionaries are stationed that reliable records are obtainable, for the Eskimos themselves do not take any interest in their own age or the age of their children as measured in years, and it is seldom possible to know how old a person is unless his birth can be checked up by comparison with some known visit of an explorer, whaling vessel, or some event of that sort. It is easy, however, among uncivilized Eskimos, at least, to get information accurate in every respect but that of age about the coming to maturity of girls, for they have no such taboo as we on the publishing of that sort of information. This taboo, like all our other social prohibitions, is soon picked up from us when Eskimos become "civilized."

Since the early maturity of Eskimo girls was first pointed out to me by Dr. Marsh, I have had a chance to observe a considerable number of Eskimos through a period of twelve years, and in many cases when it has been possible to check up the age correctly, I have found the time of maturity to be about as given by him for Point Barrow. But I have a general impression that in the places where I have been the age of maturity is now getting higher gradually. (As shown later, and mentioned above, I connect this with the poorer clothing and colder houses of the present as compared with previous generations.)

When I first learned of this low age of maturity among people living in a cold climate, I supposed I had found evidence for thinking that racial difference, or possibly kind of food and manner of life, had much more importance than previously considered in determining the age of maturity, and that the general correspondence, if there is such, between the increasing age of maturity and decreasing temperature as one goes north through Europe would be found to be partly a matter of accident. It is a curious thing that during twelve years of association with the Eskimos during which time I have spoken and written a good deal about their manner of life, it never occurred to me until during the writing of this book that their rapid development is strictly in accord with the supposition that the hotter the environment the earlier the maturity.

For to all intents and purposes the typical Eskimo in the country known to me lives under tropical or subtropical conditions (or at least did so until the last few years). The winter of 1906-1907 I recorded the estimate that the average temperature within doors of the Eskimo house in which I lived at the mouth of the Mackenzie River, was a good deal above 80° F. and frequently rose to 90° F.* From the point of view of those who spent most of the winter indoors in that house, it was a matter of no consequence that the temperature was perhaps forty or fifty degrees below zero outdoors, when the outdoor air seldom came in contact with their bodies. And even when these people went out, the cold air did not have a chance to come in contact with them except for the limited area of the face. When an Eskimo is well dressed, his two layers of fur clothing imprison the body heat so effectively that the air in actual contact with his skin is always at the temperature of a tropical summer. It is true, therefore, that while an Eskimo is indoors his entire body is exposed to a local climate as warm as that of Sicily, and when he is outdoors he carries that climate about with him inside of his clothes and applicable to ninety or ninety-five per cent. of his body area.

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* For an account of Dr. Marsh and his activities, see the various references to him in the index to "My Life With the Eskimo."

If it be supposed that early maturity in such a country as Sicily is due to the direct effect of heat upon the body, in some such way as when heat brings early maturity to flies cultivated under experimental conditions, then we see that on that theory the Eskimo has every reason to mature about as early as the Sicilian. The same conclusion follows if we consider that early maturity is due to the acceleration of the processes of metabolism due to the strain upon the body in adjusting itself to excessive heat. When an Eskimo comes into such a house as the one in which I lived in 1906-1907, he strips off all clothing immediately upon entering, except his knee breeches, and sits naked from the waist up and from the knees down. Cooking is continually going on during the day and the house is so hot that great streams of perspiration run down the face and body of every inhabitant and are being continually mopped up with handfuls of moss or of excelsior, or, according to later custom, with bath towels; and there is drinking of cup after cup of ice water. At night the temperature of the house will be only ten or fifteen degrees lower; or if it drops more, people will cover up with fur robes instead of sleeping nearly uncovered, thus keeping up the heat of the air that is in actual contact with the body. We have, therefore, produced locally within doors the same conditions which may be supposed to accelerate the metabolism of a dweller under the tropical sun.

The effect of the over-heated houses is more direct among the Eskimos upon the women than upon the men, for they remain indoors a larger part of the winter. So far as the warmth of the body out-of-doors is

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*Bartlett estimates the temperature within doors in winter of the houses of the Eskimos and Eskimo-like people of Northeast Siberia at 100° F. See "Last Voyage of the *Karluk*," p. 211. To judge by his account these Siberians do not ventilate their houses as well as the North Alaskan and Mackenzie Eskimos used to do, although his description of the foulness of the air is only a little more lurid than one that would be true of some of the Barrow Eskimo houses to-day that are cold because they are chilled through the thin walls by conduction and because fuel is scarce. In such houses every crevice by which cold air might get in is stuffed up with something. Not infrequently the keyhole is plugged with chewing-gum.

concerned, the conditions are even among the sexes, for they are equally warmly clad.

If an Eskimo ever becomes uncomfortably cold, it is likely to be on a rainy or foggy day in summer or autumn when he is wearing his old clothes so as to save the better ones from injury through wetting. Among the Copper Eskimos of the vicinity of Coronation Gulf considerable discomfort is suffered occasionally from cold, especially in the fall. But these people who do not usually count above six have no accurate idea (in years) of the ages of their children that are nearing maturity and we have no reliable data on this head from them as yet. They are, therefore, left out of this discussion.

In countries like Europe where the clothing, whether it is of cotton or of wool, is generally porous, forming a poor protection against the weather and especially against a cold wind, and where the houses are similarly badly adapted for shutting out cold (like the modern ones at Barrow), and where temperature within doors is controlled by fires that, for one reason or another, cannot be uniformly maintained, it is generally true that the farther north you go the colder the air that actually reaches the bodies of the people and has an effect upon their life processes. In North America among the Indians, as one goes north from Mexico towards the Arctic Sea, similar conditions generally prevail, and the farther north the Indian the colder the air that is in contact with his body throughout the year. For the Indians (other than the Eskimos or Eskimo-Indians) like Europeans, generally wear clothing ill-suited for keeping the body warm. The most northerly of the Athabasca Indians, for instance, appear to suffer a great deal from cold.

One winter I traveled about for several months with the Dog-Rib and Yellow Knife Indians.* I found they were so poorly clad that during the day when out of doors they had to be continually moving, for if they stopped for even half an hour at a time they became so chilled that their hands became numb. These Indians are really in continual fear a large part of the winter of ever ceasing from active motion when out of doors. In the evenings their wigwams are cheerful with a roaring fire but by no means comfortable, for while your face is almost scorched with the heat of the flames, your back has hoar-frost forming upon it. At night the Indians go to sleep under their blankets, covering up their heads and shivering all night so the blankets shake. It is, therefore, in accordance with the theory that the age of maturity increases with the increased cold of the air applied directly to the body, to suppose that the statements of Hudson's Bay traders and others in the North are reliable when they say that the common age of maturity of Indian girls is as high as, or higher than, that of north European whites.

But when you go north from the Slavey and Dog-Rib Indians to the Eskimo country the conditions suddenly change. You now come in contact with a people who have (or had, till they became "civilized") a system of living almost perfectly adapted to a cold climate, while the northern Indians have a system almost unbelievably ill-adapted to the conditions in which they live. Here, accordingly, you have a sudden shift back to a sub-tropical early age of maturity which at first seems to be a direct contradiction of the accepted theory, but which when properly understood is in accordance with it.*

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* See various references to Slavey, Dog-Rib, Hare and other northern Indians in "My Life With the Eskimo."

Spring work was commenced by sending Jenness, Wilkins and the Eskimo, Asatsiak, to precede us to a fishing lake back of Cape Halkett where they were to attempt catching fish in quantity for dog-feed, so that later on we might use them for our journey from there east towards Collinson Point. A few days later the rest of us followed, except Pauyurak who wanted to leave our service. He told me that when he had worked for white men before he had usually stayed in the ship most of the winter and when he traveled he had been in the habit of riding, but he found in traveling with us not only that he didn't stay in one place very long but that when he traveled he had to run. He seemed to consider this latter partly a trial and partly an indignity. That being his frame of mind, I was very glad to have him remain behind at Cape Smythe.

At Cape Halkett a little later we lost Asatsiak. Somebody in that community picked him out for a desirable son-in-law. That seemed to meet his ideas and we had to forget that he had promised to work for us for three years. As I have had occasion to remark before, the attitude of an Eskimo towards a contract seems to be about the same as the attitude of a sovereign state towards a treaty,—it is an agreement to be kept if it suits you to keep it and to be abrogated whenever you feel that your interests are better served that way.

The defection of these two Eskimos did not hamper us especially as we had picked up a good traveling companion in Angutitsiak, a Point Hope native whom we found at Barrow. He served the expedition well for three years, first with me on this trip and later with Dr. Anderson in Coronation Gulf.

We left Jenness and his interpreter, young Alfred Hopson, with the Eskimos of Cape Halkett and proceeded eastward. How this crossing of Harrison Bay impressed McConnell is shown by an interview given the New York *Times* several years later (September 18, 1915). His enthusiasm and worshipful attitude in the interview are to be explained (unless they are due to the reporter) by the fact that after having "perished amid a wilderness of ice," in the newspaper announcements of a year earlier, I had now just come dramatically to life in the front-page headlines. Apropos of my resuscitation an interviewer had been sent to McConnell, who then was in New York, with result in part as follows:

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* See *The Journal of the American Medical Association,* Sept. 4, 1920, "Temperature Factor in Determining the Age of Maturity Among the Eskimos," by V. Stefansson.

" . . . Those down here who thought he was dead did not know him. . . . You see the Stefansson they had met at banquets and functions became another man entirely when he left civilization behind him. I know because I traveled with him all one winter. He is at home in the Arctic. . . . The secret of his long so-called impossible trips is that he knows how to take care of his men and dogs. His sense of direction seems almost intuitive. I have never seen him become confused as to direction. On one occasion I followed his lead through a blinding snowstorm for hours. . . . The last two hours were made in darkness yet at the finish he was not over a hundred yards off the trail. I say 'off the trail' but in fact there was no trail.

"At another time I followed him across a bay for forty miles. He made his own trail and at the end of the forty miles we came to . . . the small sandspit (he was aiming for)."

These things seemed extraordinary to McConnell, and Wilkins has told me that they appeared equally extraordinary to him, but they were really very simple. To begin with, I knew the country. It is a region where only three kinds of wind blow. The strongest is from the southwest, the next strongest is from the northeast, and the third is from east-northeast. Occasionally there is a little wind from some other point but in general the snowdrifts are deposited by one of these three winds. Commonly you know as a matter of recent history which of the three winds it was that blew last, but in any event an examination of the ground will easily show which it was. On the same principles as are employed by stratigraphic geologists, you can tell by size and other characteristics which drifts were made by the strongest winds, and furthermore you can tell the direction of the wind by the fact that the drift is lowest and narrowest to windward and gets higher and wider to leeward before finally dropping down abruptly to the general level. After as many years as I have had of arctic travel it would be strange if I could not tell at a glance, where only three kinds of drift are involved which was the S.W. drift, which the N.E. and which the E.N.E. And if it was dark so I couldn't see I could tell the shapes of the drifts by stopping and feeling them carefully with my feet, or if necessary by dropping on all fours, crawling about and examining them with the hands. Then, having determined either the N.E. or the S.W. drifts, the whole remaining problem is to cross every such drift at an angle of about forty-five degrees, ignoring all the other drifts. By doing this you are really traveling the compass course S.E., which takes you from our starting point on the west side of Harrison Bay towards a gap about four miles wide between the mainland and the Jones Islands on the east edge of the Bay. I knew if I erred by going too much to the right I should run the danger of getting tangled in the grassy mudflats of the Colville River where the traveling is very bad on account of the soft snow in the tall grass. So I made sure that if I did err it should be by going too much to the left, in which case again I would strike the rough ice outside of the Jones Islands.

This was a two days' journey made largely in thick weather, and there was such chance for error that it was largely a matter of luck, although the reasoning and method were correct, which made me strike, as McConnell has said, within a few hundred yards of the desired place. However, I did not strike quite as close as he thought. I had noted some time before we got across the bay certain knobs of rough ice which indicated that I was a little too far to seaward and so I turned slightly to the right.

There was also the performance which impressed McConnell and Wilkins (and which Wilkins has since written about) of announcing to them in advance, a day or two after this, when we were in thick weather and when the coast appeared to them to be absolutely featureless, that in a mile or so we would arrive at a platform cache which I had seen some years before. This was merely a Sherlock Holmes trick, for the coast was not featureless but was merely featureless to their inexperienced observation. I had been up and down it so often that I knew every cut-bank, and my last journey had been only a year before so that the topography was still vivid. To forecast your arrival at an ancient Eskimo camp a mile after passing a creek mouth is no more wonderful than knowing that a fifteen-minute walk will take you to the Flatiron Building from the Washington Arch.

When we got as far as the mouth of the Shagavanaktok River we had a series of trivial though rather instructive adventures. We came upon a sled trail running to seaward and followed it ashore to a camp the characteristics of which told me two things: One was that it belonged to my former traveling companion, Natkusiak,* and the other that there must be the carcass of a whale to seaward. Evidently the sled trail led to this carcass. We were beginning to run short of dog-feed, so the next day I sent McConnell and Angutitsiak with a sled to discover the whale and get a load of meat.

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*See "Life With the Eskimo." Natkusiak was with me most of the four years covered by that book.

During that day I decided to walk out to Cross Island, for we were now abreast of it, thinking that if the *Karluk* were to the east instead of to the west Bartlett might have sent a message ashore and left a communication there for me. It was about a fifteen-mile walk to the island. When I got there I found no message from the *Karluk* and no sign of human visits during the present winter.

This was the time of year when the days are shortest. In a certain sense there are no days at all around Christmas, for the sun is well below the horizon and the light at noon even on a clear day is only a bright twilight. It had been cloudy all along and began to snow on the way home. Therefore I had before me in finding camp one of the interesting problems which continually confront the arctic hunter and the solution of which is as absorbing to me as that of a problem in chess.

Any Eskimo or experienced white man is careful to have his camp near some landmark, preferably one of a linear nature. In other words, pitching your camp near the foot of a conspicuous round hill would be of little service in finding your way home, for whenever the weather became thick or the night dark you would be unable to see the hill from any distance. The landmark of most use is a long, fairly straight ridge or a cut-bank conspicuous enough and characteristic enough not to be overlooked or mistaken for another. Our present camp, which was the Eskimo camp from which its owners were temporarily absent, was at a cut-bank on the eastern edge of a river delta. To head straight for it I had to go approximately south. But the first rule, if you want to find camp in darkness or thick weather, is not to try making a straight shot towards it. For if you do and miss, you will not know to which side to turn to look for it. In my present case I was north of a camp located on an east and west coast line. It would not be wise for me, I knew, to set a course too far west, for if I did I should get myself tangled among the delta islands and mudflats of the river. Clearly, the thing to do was to make sure that I was going to strike the land too far east, for not being a delta that land would presumably be of simpler topography and I would merely have to follow the shoreline west until I came to the camp. In fact, I thought I knew the coast, for I had passed it several times although I had never stopped there to hunt. On the present occasion, although we had slept a night at the camp I had not seen the topography, for we had arrived after dark and I had started for Cross Island before daylight in the morning. But I imagined that the camp was on a round point with lowland lying to the east and rolling hills commencing two or three miles back.

With confidence in this analysis, I took the wind at a certain angle on my cheek, made sure occasionally with the luminous dial of my pocket compass that the wind was not shifting, and walked steadily so as to strike the land, as I thought, a mile or two east of the camp. I knew my rate of walking and timed myself carefully. After awhile I began to worry a little, for I had walked about an hour longer than I expected without striking any land. It was now about nine o'clock at night with thick clouds and light snowfall so that it was not possible to see even a dark object on the snow background more than five or eight yards away.

At the end of this superfluous hour of walking I had one of the surprises of my life, for I stumbled against a heap of stones. Now it happens that years ago my former commander, Leffingwell, wrote a geological paper in which he said that stones were absent from the coast west of Flaxman Island, and that in a published review of that paper I have pointed out that while stones are nowhere numerous, I have in repeated journeys along that coast observed a few. I had seen Leffingwell since and found we then agreed that there were a few stones on the coast. But here I was stumbling over a heap of boulders that could not be called "a few" by any reasonable stretch of the vocabulary. I sat down on one of them to think.

It first occurred to me that I might have struck to the west of the camp instead of east of it and that I might now really be up in the valley of the Shagavanaktok River, having by accident entered the delta by a straight channel without striking any of the islands. I thought this over carefully and decided that it could not be. Daylight had lasted on my backward road until I was only eight or nine miles from camp and I had then set a course to strike two miles east of it and I considered it absurd that I could make an error of more than two miles in a distance of eight. The conclusion was that I must be east of the camp. But this seemed also absurd, for observations in previous years had told me that to the east of the camp the land was continuous, with a low coastline and flat land back of it for two or three miles. And here I had stumbled against the face of a cut-bank covered with boulders that seemed like a moraine. At first sight it would seem that this reasoning had led to the absurd conclusion that I was neither east nor west of the camp, but the answer had to be that my observation of the land on passing it in previous years must have been wrong and that instead of it being a low land gradually rising towards the interior, it must be in reality a practically landlocked bay with a narrow entrance which I had never noticed. I knew that this entrance could not be wide, for had it been I would have noticed it in passing the coast, which I had done both by boat in summer and by sled in winter.

Having decided that I must have discovered a new bay lying east of the camp, I also had to conclude that the bay might be of any conceivable contour and that the only safe thing would be to follow all of the coast line. This I set about doing. For awhile the bank was conspicuous and I could see the loom of it even in the darkness, but after awhile it became more sloping and lower and I had to be continually stooping and picking up handfuls of snow or scratching the ground to find whether I was on the grassy land or on the snow-covered ice. I knew I could not be more than about three miles from camp in a straight line, but I did not know, except very generally, which direction this was, so there was nothing for it but to keep following every indentation of the bay. It took several hours, and I arrived home at one o'clock in the morning, having been on my feet about seventeen hours.

I was, of course, not tired. When one is in good training almost indefinite walking leaves you still ready to walk farther, and I was in an especially good humor through having solved one of the most interesting problems of the sort I had ever met. It seemed to me an opportune moment to use it as an example for impressing a valuable lesson upon my companions and I accordingly gave them an extended lecture on the subject. It was only later it dawned on me that they might not have been much interested at the time, and it must be admitted that no one is likely to be in a very receptive frame of mind who has sat up waiting for hours expecting somebody to come home, and then fallen asleep to be awakened in the middle of the night. It seems that on an earlier occasion I had impressed on them what is really one of the first principles of arctic technique: that if ever at night they came to the conclusion they were lost, they should stop quietly where they were and wait for daylight. One of them now wanted to know why I didn't follow my own rule and sleep out all night. This was a point of view that had never occurred to me, for it had never struck me that I was lost.

This incident shows that it takes years of experience with any peculiar environment such as a desert, the ocean, or the Arctic, before one can judge correctly between the merely spectacular and the really difficult. Here were two keen young men who had been lost in admiration over the elementary trick of using snowdrifts as a compass in crossing a forty-mile bay, and who could see nothing interesting or particularly worth explaining in the comparatively creditable feat of finding a camp in darkness under the conditions I have just described.

In my whole arctic experience there is nothing of which I am more tempted to brag than of these eight or nine hours during which I groped ahead amid falling and drifting snow through darkness, never doubting that every step brought me nearer to a camp that I could not see till I was within five yards of it. Every now and then I had to dig deep pits with my hunting knife to see if I was on land or ice. I never dared try to follow the shoreline exactly for I never knew when I should come to the camp and pass it unnoticed. So that no matter which way the coast line trended I always zigzagged it, groping my way inland and digging till I found grass or soil, then groping my way seaward till my digging revealed ice. I knew the camp was not far away if I only could walk straight to it, but I also knew that though I was almost sure to be able to figure out its direction, I never could figure out its exact location. Each time that impatience whispered to me, "Make a shot at it, you might hit it," discretion answered, "Yes, but if you miss once you never will know if camp lies to the right or to the left, ahead of you or behind. Now you know it is ahead and that you will inevitably find it at last. You will never forgive yourself if you allow yourself to get lost when you needn't."

And so I kept on, groping, zigzagging, digging, now to find earth and now to find sea, and I got home. But the trouble is that when I want to brag about it nobody seems to see the importance of the achievement as I do.

After my lecture and its comparative failure, we seemed about to commence a discussion of whether I had or had not been lost when McConnell remarked that he and the Eskimo had been unable to discover the whale carcass. He confided to me later that the Eskimo had not seemed very anxious to find it. They had followed the trail for awhile and when McConnell could no longer see it he had assumed that Angutitsiak could, for he then retained his childlike faith in the infallibility in such matters of the Eskimos. But when after awhile he asked the Eskimo where the trail was, he answered that he had lost it long ago but was hoping to find it again.

The hope haphazardly to find again a trail which you have long ago lost may show merely a sanguine temperament, but I think McConnell was right in interpreting it to mean that Angutitsiak thought chopping whale meat for dog-feed would be pretty hard work.

The next day I sent McConnell and Angutitsiak again to look for the whale, never dreaming that they might not find it, and went out for a walk in another direction. On the way home I struck for the place where I thought the whale would be and found it, with plenty of evidence of Eskimos having been there to get meat several weeks before. I also found a white fox dead in a trap, but I saw no trace of McConnell and the Eskimo. On coming home in the evening I found that they had miraculously missed that whale a second time. This amused me almost as much as it annoyed. But two days seemed enough time to lose, so we proceeded next morning towards Collinson Point, feeling fairly certain that we would fall in with Eskimos who could give us dog-feed. This proved to be correct, and the Eskimos also gave us news of interest. Natkusiak, I learned, had gone east to Collinson Point to pay a visit to our ships there, but a pile of seal and whale meat belonging to him had been cached in the neighborhood of my informant's house. The next day we picked up all we needed from this cache and proceeded to Flaxman Island.

Here we found Leffingwell in the house which had been built in 1907 from the wreck of the *Duchess of Bedford*. He had already spent several winters there, although he had made two visits to his parents in California, passing each time a winter in the south. The house had been added to and was rather palatial for those latitudes. He had an extensive library in several languages, one of his rooms was furnished with a roll-top desk, and altogether the equipment ranged from the sumptuous almost to the effete.

But I must make clear immediately that while the outfit was elaborate it was in the main a relic of the times when he had been a tenderfoot and his tastes had not yet been turned towards simplicity by his experience in the North. The first year he was there he had "lived well," as the saying goes. He had no end of variety of jams and marmalades, and cereals and food of all sorts. At the end of the year he complained on arrival in San Francisco (or at least the reporters quoted him so) that he had had a very hard time. He had been several weeks without butter and so many more weeks without something else. How his tastes had altered in the seven years since then was best shown when McConnell volunteered to cook breakfast the next morning and suggested that the breakfast might consist of oatmeal mush and hot cakes. This struck Leffingwell as an extraordinary suggestion and the genuineness of his surprise was clear from the tone in which he said, "Mush *and* hot cakes! If you have mush what's the use of hot cakes, and if you have hot cakes what's the use of mush?"

This principle is the essence of dietetics in the North. The simplicity of living on few foods contributes not a little to the charm of the North which one does not appreciate fully till he comes back to the complex menus of civilization. I would not go so far as to say that you could decide which was better, mush or hot cakes, and then live forever on the one or the other. But if instead of one of these you select some complete food, such as fat caribou meat for instance, then it contributes considerably to your satisfaction in life from every point of view, including that of enjoyment of your meals, to have for every meal indefinitely caribou meat and nothing else. I am aware that this sounds like a joke to the ordinary reader, but it is truth to all who have tried it. I have never had experience with a man who did not protest in advance that he would be sure to get deadly tired of a diet of nothing but caribou meat, but I have never found a man who in actual practice did get tired of it. They invariably like it better the longer they are confined to it. This, of course, is no unique experience in the world. There are probably no people on earth so fond of rice as those Chinese who get little else. And if it be true that there are Scotchmen who live mainly on oatmeal, then it is certain that those Scotchmen will prefer oatmeal to almost any food.

Leffingwell was able to tell us a good deal about the *Alaska* and *Sachs,* making more explicit the information we had received at Cape Smythe. Everything was going well. The men were living at Collinson Point, but Charles Thomsen and his family of the *Sachs* were at a trapping camp six or eight miles this side. Most of the men would be at the camp except Dr. Anderson who would probably not be at home, for he had expected to take mail to Herschel Island for the Mounted Police to carry to Dawson in January.

That everything was so well with our people was largely thanks to Leffingwell. It was one of the best pieces of luck of the expedition that he happened to be coming to the Arctic in 1913 and accepted my invitation to be our guest on the *Sachs.* Chipman, whom I had placed in charge of her to take her to Herschel Island where she was to be handed over to Murray, was new in the country, though in every other respect a good man for his task. Although an old hand in Bering Sea, Captain Bernard had never been on the north coast of Alaska. It was just here that Leffingwell's local knowledge, of the kind the *Sachs* needed, was fuller than that of any other man. He has himself made the only good map of this part of Alaska.* This map shows the soundings by which vessels of light draught can follow the devious channels inside the "lagoon," while protected from the sea pack by the line of reefs and islands that fence most of the coast from the Colville to Flaxman Island. What was more, Leffingwell himself, first with the Anglo-American Polar Expedition schooner *Duchess of Bedford* in 1906 and later with his own private yacht *Argo,* had navigated these channels and was therefore an ideal pilot. So the *Sachs,* though she had been in some tight places with the ice between Point Hope and the Colville, had had little trouble when once she got to the "lagoons."

Dr. Anderson, who like myself knew the coast better (from our 1908-12 expedition) by sled in winter than by boat in summer, had had more trouble bringing the *Alaska* through, though he got her creditably and without injury to the same wintering place, Collinson Point. Here the schooners were frozen in, quite safe both of them, Leffingwell said, though they were not in a real harbor but merely protected from winter ice pressure by shoals to seaward.

We were comfortable and had a good time at Leffingwell's, but it worried my companions a little that we stayed three or four days. In fact, they had been worried a good deal on the entire journey east from Barrow by my conspicuous lack of hurry. Their book notions required heroism and hardship. I really think they felt we were falling conspicuously short of the best standards of polar travel in making a midwinter journey in comfort. If it could not (as by the best canons it should) be a flight from death, a race with the grim terrors of frost and hunger, we should at least refrain from the almost sacrilegious levity of making a picnic of it. But it almost was a picnic and I at least was enjoying myself. For good or ill, we were evidently unable to affect the destiny of the *Karluk* in any way and so she was, in a sense, off our minds. Nearly every Eskimo we met on the coast (and we met more than double the number that I have had the temerity to discuss in this narrative) was an old friend. Then there was my insatiable interest in the study and practice of the language which after six years I knew well enough to talk fluently although not nearly well enough to be satisfied.

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* This map has since been published by the U. S. Geological Survey in connection with Leffingwell's painstaking and excellent monograph on "The Canning River District, Alaska."

The beliefs of men of our own country often lack freshness to us because we have been familiar with them from childhood, and lack interest because we have outgrown most of them. But here were people in whose daily conversation unheard-of superstitions kept cropping out continually. When they were telling about their sealing experiences I could enjoy the intellectual gymnastic of trying to separate the biological knowledge from the superstition, the facts from the theories. Very few Eskimos are really liars, and still there is scarcely an Eskimo who can describe to you a day's seal hunt without mixing in a great many things that never happened (although, of course, he believes they have happened). Their delight in seeing you when you come, the hospitality and friendliness of their treatment no matter how long you stay, and the continual novelty of their misknowledge and the frankness with which they lay their entire minds open to you—all these are not only fascinating at the time but profitable for record and reflection.*

Continually there recurs to me the thought that by intimacy and understanding I can learn from these people much about my own ancestry. These men dress in skins, commonly eat their meat raw, and have the external characteristics which we correctly enough ascribe to the "cave man" stage of our forefathers. But instead of ferocious half-beasts, prowling around with clubs, fearful and vicious, we have the kindliest, friendliest, gentlest people, whose equals are difficult to find in any grade of our own civilization. They may not come up to all our high ideals (in which case the question may also arise as to whether our ideals are really high). They do not meet misfortune with a noble fortitude, but they have the happier way of refusing to recognize it when it comes. They eat a full meal though the larder be empty at the end. They may die of starvation (they hardly ever do), but if so it is usually their optimism that is at the bottom of it. Perhaps they have been dancing and singing for week after week, neglecting the hunt on the theory that tomorrow will take care of itself. It may be true as Shakespeare says of the valiant, it is certainly true of the optimistic, that they never taste of death but once.

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* For some account of the beliefs and mode of thought of the Eskimos, see "My Life With the Eskimo." For more detailed statement see "Anthropological Papers of the Stefansson-Anderson Expedition," published by the American Museum of Natural History, New York, 1914.

One reason we stayed over at Leffingwell's was to help him measure a base for his triangulation, but the spell of bad weather lasted too long and he was not particular about doing it just then, so that eventually we proceeded towards Collinson Point without having done him this little service.

The distance to Collinson Point was about thirty miles. Although the morning was fair, it turned out to be later one of the bad blizzards of the year, and we did not know exactly where Thomsen's house was. But I did not want to pass it by, so we followed along the coast about two hours after the last twilight gave way to pitch darkness. Finding it was one of the feats that McConnell has since written about as an example of what by analogy to woodcraft may be called *polarcraft.* But that again was like finding your way about in your home town. I knew that certain places were suitable for house-building and others were not, and did not have to look everywhere for this house but only at certain places where it could reasonably be expected. I knew that Thomsen, being the ordinary type of white man, would be sure to build where driftwood was especially abundant, and that driftwood accumulates only on a particular kind of beach—usually facing northwest in this district, as the high tides come with a west wind. It turned out when we found the house that Captain Bernard was there with his dog team. It had been a fairly long day, so the rest of our party stayed overnight at Thomsen's, while Bernard hitched up a dog team and took me on to Collinson Point. Wilkins and McConnell arrived the following morning, thus bringing to an end their first winter journey. In my eyes they had covered themselves with credit, for they had proved as adaptable to polar conditions as any men I ever saw—and Wilkins not the less of the two though he hailed from subtropic Australia and had never spent a winter north of England. But, as intimated above, I think they were disappointed—here it was almost Christmas time, this was the very middle of the dreadful "polar night" (so called because for weeks the sun does not rise), and they had finished a three hundred-mile sledge journey without a hardship that came anywhere near storybook standards!

# CHAPTER IX

## A PAUSE AT WINTER QUARTERS

AT Collinson Point I got the warmest sort of welcome, although it could scarcely be said that they were glad to see me, for seeing me here meant that something had gone wrong elsewhere. From the reports of whalers and their own knowledge of the condition of the ice, they had inferred long ago that the *Karluk* was in trouble. The *Belvedere,* too, had seen our smoke, as mentioned earlier, and had inferred from its position and stationary nature that we were keeping up steam while held fast by the ice ten or fifteen miles out in the pack. The common whaler opinion was that we ought to have abandoned the vessel immediately, coming ashore as best we could, for that is the method the whalers have always followed.

As Leffingwell had told me, Dr. Anderson and three or four other men were absent, having gone east towards Herschel Island to get their letters and government dispatches into the hands of the Royal Northwest Mounted Police at Herschel Island, to be carried to Dawson by the Peel River Patrol in January. In Dr. Anderson's absence Chipman was in command, and the next day he gave me verbally a report of the situation and of the plans as they stood up to the moment of my coming.

Chipman reported it had been the opinion of Dr. Anderson that their resources were inadequate for doing, the coming spring, any survey work except the coastline between the International Boundary and the mouth of the Mackenzie River. They had discussed the possibility of surveying the Mackenzie delta but had concluded that it was too far away from Collinson Point and beyond their resources. They had planned, therefore, in addition to this coast survey merely a reconnaissance of the Firth River (sometimes called the Herschel Island River) which heads in the Endicott Mountains to the south. Contrary to my view, it was the view of Dr. Anderson, in which the other men had necessarily concurred through their lack of local experience, that no survey work either geological or topographical could be done in the middle of winter, and that everything would have to wait for the warm weather of spring. It has always been my opinion that the arctic cold need not entirely prevent work of this kind and that some sorts of geological work can be even better done in winter than in summer, especially in places where the wind keeps the snow away and in river canyons where the ice of winter gives more ready access to the foot of a cliff than is possible when the stream bed is full of turbulent water in summer.

One point that naturally interested me was that Chipman told me they had made a trial of my method of "living off the country" and had found that it did not work. The account which he gave me of their adventures in this connection sounded like the résumé of a comic opera.

It seems that in the fall (as some said, to see if there were game in the mountains, and as others had it, to demonstrate that there was none), a party consisting of about half the expedition had made a foray up the Ulahula River.*

When a man hunts for a living seriously in the autumn months, he gets up in the dark of the night. By dawn at the latest he leaves camp and is eight or ten miles away, beyond the area from which

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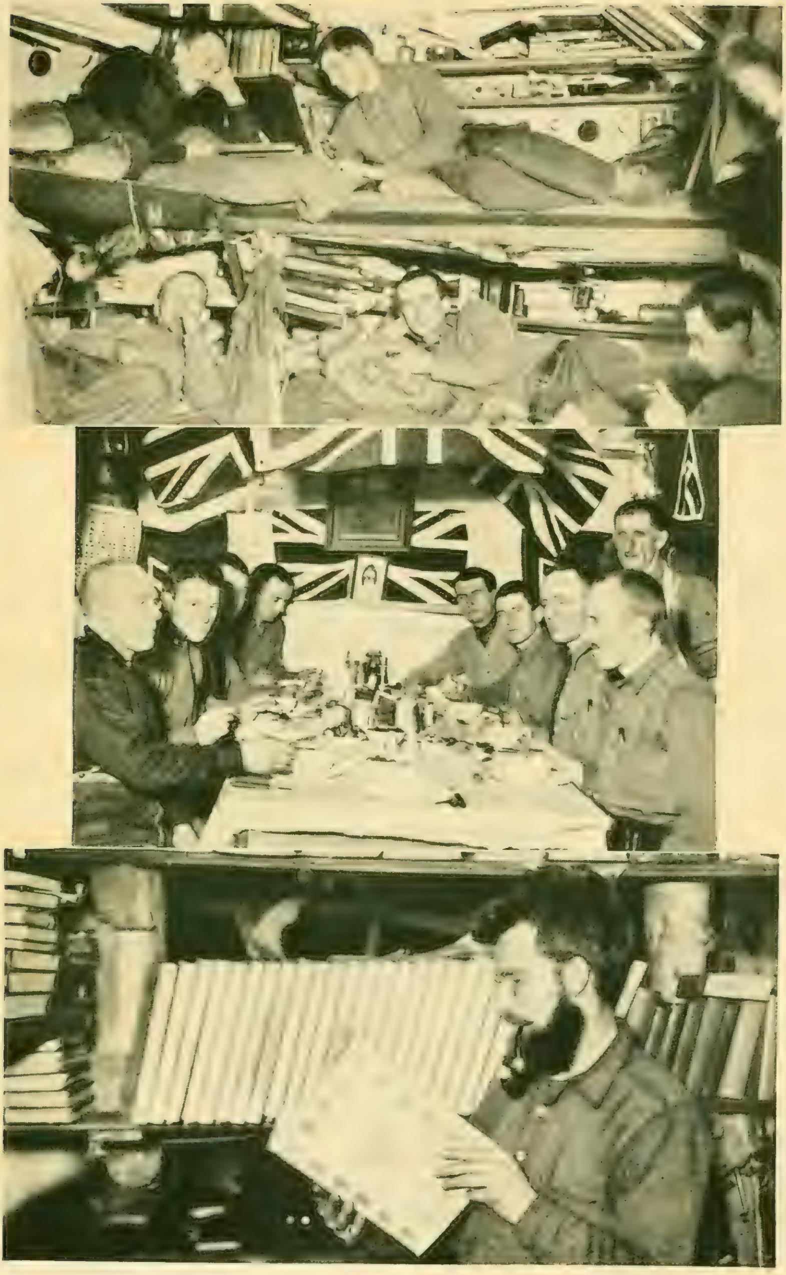
* Probably because the Eskimos who now occupy this country are immigrants and because none of the real aborigines or their descendants are living in the vicinity, the Eskimo names of two rivers in this locality seem completely lost and in their stead we have the "Ulahula River" and "Jags River."

*Ulahula* is a jargon word which may have its source in some South Pacific language, perhaps that of the Hawaiian Islands, and which in the "Pidgin" used by whalers in dealing with the Eskimos, signifies "to dance" or "to celebrate." The natural inference, then, is that the name *Ulahula* was given to the river by some whaler who knew that the Eskimos had either at a particular time or else customarily held dances or celebrations near it. This may connect the name of the river with the island at its mouth, Barter Island, which is so called because the natives from the coast eastward and westward as well as Indians from the Porcupine valley and other parts of the interior used to meet here for purposes of barter every summer. We have records of these meetings from many sources. I have talked with a number of Eskimos and some Indians who themselves took part in these meetings, and with Mr. Joseph Hodgson and Mr. John Firth, of the Hudson's Bay Company, who were both stationed in the Porcupine valley as Hudson's Bay factors while the Indians with whom they traded also made these journeys regularly to Barter Island.

A somewhat smaller river east of the Ulahula is called the *Jags*. The origin of this name is definitely known. It is connected with a western Eskimo who was a mighty hunter in the employ of the whaling ships and who made the valley of this river his special hunting ground. At first he was a sober, industrious and efficient man but later he became so addicted to drink that his usefulness was greatly lessened. At the same time his real name was forgotten, making way for the nickname of Jags. When he died his name which had attached itself to the river was retained, both by the Eskimos and the whites.



Winter Quarters at Collinson Point.

*Top Picture:* In upper bunks, Cox and O'Neill. Below, Anderson, Chipman, Leffingwell. *At Table,* left to right: Bernard, McConnell, Johansen, Chipman, Leffingwell, O'Neill, Anderson, Brooks, Cox. *Below:* Blue.

Wilkins Taking Movies. The Morning Start.

Wilkins Showing Movies to Eskimos, Christmas, Collinson Point.

game can have been scared by the barking of dogs or the smoke smell of the camp, by the time that daylight enough for good shooting comes into the southern sky. He then uses to the best advantage the four or five hours of hunting light, going from high hilltop to high hilltop and examining with his field glasses every exposed hillside or valley. If he does not see game the first day, he hunts similarly the second; and if he finds none the first week, he continues the second week. For it is an essential of hunting conditions that although game may be abundant in a large region of country, it may at any time be absent from any small specific section.

But this hunting party, which was partly a picnic and partly a baptism in the hardships of polar exploration, was, from Chipman's description, a noisy rout of convivial spirits who seldom went far out of each other's road and who in various ways gave the game ample notice to leave, if there was any game. Probably there was none, for the excursion only lasted a week and it would be a matter of mere chance if in such a short trip game should be found. However, the trip served the useful purpose of easing their consciences, for now they knew that no game could be got and that there was no occasion for them to do anything but wait for the spring in the orthodox way of explorers, reading the Encyclopædia Britannica or penny novels, according to temperament, making long diary entries, listening to victrolas and having flashlight photographs taken now and then, showing the comforts and convivialities of an arctic home.

A report had been sent to Ottawa, Mr. Chipman informed me, to the effect that the fall hunt had been a failure and that there was no game in the country, that winter would be spent in camp, and that when the weather became reasonably warm in the spring surveys would be made of the Herschel Island River and of the hundred miles or so of coast between the International Boundary and the Mackenzie mouth. When summer came the party would proceed to Coronation Gulf to take up the work which had of necessity been deferred a year through the compulsory wintering at Collinson Point.

Chipman being a new man in the country, it was easy for me to convince him that a far wider program was open to us. When I showed him a copy of my report to the Government from Point Barrow, outlining the project of surveying not only the Herschel Island River and the coast from the Boundary to the Mackenzie (as they had planned), but also surveying and sounding the Mackenzie delta, he was delighted. Like any good workman he was anxious to do as much work and to have as much to show for his time as possible.

Before my arrival the point of view had been that they could use for scientific and exploratory work only the resources which they actually had in their own personnel and in the dogs and supplies brought from Nome. My view was, on the contrary, that when the Government had an expensive expedition in the field with a large staff of scientific men it would be folly to hamper any of the staff by confining their operations to what could be done with two or three dog teams and limited supplies, when good dogs could be purchased at a reasonable price locally and natives and whites engaged to assist in the carrying out of a more extensive work. Groceries and other supplies were available for this larger program, both from the whalers and traders along the coast just east of us and from the Hudson's Bay Company at Fort Macpherson. I felt confident, too, that the Royal Northwest Mounted Police would assist us with whatever resources they might happen to have either at Herschel Island or Fort Macpherson.

A few minutes after I arrived at Collinson Point Andrew Norem, the steward of the *Mary Sachs*, asked me for a confidential interview at the earliest possible moment. The Collinson Point party, apart from those who, like Thomsen, had trapping camps scattered about, were all living in a large log cabin originally built by "Duffy" O'Connor when he had his trading station there the year 1911-12, a cabin purchased by us and fitted up, with the kitchen in an alcove and a storehouse adjoining. With ten or fifteen men around in the evening when there was no outdoor work to do, it was not possible to talk privately, and I had to put Norem's request off until next day.

What he had to tell me then was that he thought he was going insane. He said that during his lifetime he had seen various men become insane and that his own symptoms were like some of theirs. In particular, he had occasional fits of despondency. At these times he not only felt that every one was displeased with him but even had the idea that they were persecuting him in a most malicious way. If he lit his pipe he imagined that the tobacco had been adulterated with some evil-tasting and evil-smelling mixture. This usually made him angry, although he sometimes had enough sense to realize that he was probably imagining things. On several occasions he had induced one or more of the men to take a puff or two out of his pipe and they had always said that the tobacco was all right. When the fits of depression were on he took this verdict as a sign of conspiracy against him; but in his lucid intervals he realized that the tobacco had not been adulterated and that the whole thing was imagination. Lately these fits had been coming on two or three times a week. They had never lasted longer than a day.

After a first momentary doubt I was convinced that Norem's case was serious. Chipman told me that Norem had been acting queerly for several weeks. Lately he had begun to tell members of the expedition in confidence that he thought he was going crazy. Hereupon the camp was divided fairly evenly into two parties: some thought the trouble was really serious, while others believed it was merely a trick to get out of doing his proper share of the work—"malingering," although the war had then not yet enriched the common vocabulary with this word.

It seemed that after the two ships went into winter quarters, arrangement had been made that Charles Brooks, steward of the *Alaska,* should be in charge of the cooking one week and Norem, of the *Mary Sachs,* the next. This arrangement had been in effect only a short time when Norem began to do his work badly. I found in the camp a feeling against Dr. Anderson because of his leniency towards Norem, whom some of the men regarded as a plain shirker, and I knew my decision was by no means popular when I took Anderson's view, confirming the arrangement that for the present Norem should be required to do none of the cooking and should be given the most healthful possible outdoor work, such as chopping wood, going with dog teams to fetch driftwood, and the like. I also arranged with Captain Nahmens of the *Alaska,* who had a trapping camp about six miles away, to invite him now and then for a visit. An apparently spontaneous invitation of that sort would be more likely to relieve his mind than an order directing him to go out to Nahmen's camp and stay there.

For the time this plan seemed to work well and during my brief stay at Collinson Point Norem did not have the melancholia. Captain Bernard and one or two of the others who had known and liked him in the mining camps of Alaska were rejoiced at the change, but others said that he was merely holding back so as not to give me any chance to determine from his tactics whether his condition was assumed or real.

# CHAPTER X

## WE MEET DR. ANDERSON

I STAYED only a day or two at Collinson Point and then started eastward along the coast, encouraged by the enthusiasm with which Chipman had received my plans for enlarging the work, and anxious to overtake Dr. Anderson before he sent away his mail, so that he could, if he desired, alter that report to the Government, eliminating the sections describing our lack of equipment and consequently restricted program and substituting the more ambitious project which I had outlined from Barrow.

But on meeting Dr. Anderson's party about twenty miles east of Collinson Point, I found that his views and mine were far from coinciding. He insisted that we must abide by his program, which he had already sent off to Ottawa, and said that he did not believe we had any right to purchase dogs and supplies or to hire men for the projected survey of the Mackenzie delta, nor did he think the Government would approve of these expensive and too ambitious plans. He was of the opinion that the Mackenzie delta was too far from Collinson Point and could not be successfully reached for survey work, and also of the opinion that no really useful work would be done in sounding the river channels. He considered we had been instructed to work in the vicinity of Coronation Gulf and that we should practically mark time until we got there, husbanding all supplies and incurring the least possible expense no matter if this economy did limit very narrowly the scientific work done.

My reply to this was that the instructions telling the expedition to do its first year's work in the vicinity of Coronation Gulf had been originally formulated by myself, although issued over the signature of others, and that I could not but know exactly what they meant. We had expected to reach Coronation Gulf this year, but now that we could not I took it as our duty to do as much as possible where we were. It seemed to me that as we had already in the field an expedition with a large staff of scientists drawing pay and costing as a whole perhaps one or two hundred thousand dollars, it would be folly to lose this entire sum just to save an additional expenditure of fifteen or twenty thousand dollars.

When it became clear that our views were so diametrically at issue, Dr. Anderson tendered his resignation, saying that he would continue as a scientist on the staff but would no longer remain second in command and in local charge of the southern section. He changed his mind about resigning when I pointed out that in that event I should have to put the party under command of Chipman and it would lead to an untenable situation to have him, a man of many years of experience and older, under the command of Chipman, a young and inexperienced man no matter how competent.

Anderson's alternative was that I should stay and take local command myself. This I could not consider, both because it was not in accord with my judgment and also because I had already reported to the Government that I would not myself remain on shore in Alaska but would go north over the ice trying to fulfill the geographic purposes of the expedition. Exploration of the Beaufort Sea had always been our main task and the main reason for there being an expedition at all. This had applied from the earliest stage when it was under American auspices; and it was the cardinal point when I discussed the expedition with the Prime Minister of Canada, Sir Robert Borden, at the conference which led to his taking it over as a Government enterprise. Later, at a meeting of the Cabinet, to which Sir Robert invited me, I had again presented the same plans, receiving for them the approval of the Premier's colleagues.

While partly conceding these points, Dr. Anderson still maintained that as the *Karluk* had been lost, I had no right to divert any supplies or men from any other section of the expedition to the part which the *Karluk* had been expected to carry out even though it had been the central part. Here I replied that I had purchased the *Mary Sachs* as a sort of tender to make herself useful wherever she was needed. The commander of the expedition must judge for himself the meaning of the instructions by which he was bound, and do whatever seemed to him within the purpose of those instructions. I could not escape the blame if the expedition failed; it was for me therefore to insist on the carrying out of the plan I thought most likely to bring success.

Dr. Anderson said he considered it impossible to explore the Beaufort Sea with any resources which we could get in Alaska and that any attempt to do so would be abortive, resulting in the expenditure of money, the waste of supplies and probably the loss of lives, without any adequate result. I thought our prospect of success good even with only the resources we already had or could scrape together. This amounted to another phase of the dispute over whether an exploring party can live by forage on the ice of the polar sea. I had full faith in that method and my colleague had none.

The result of the discussion was that I refused to take Anderson's resignation and decided that he must remain in local charge of the Collinson Point base, advising him that he could protect himself by making any written protests or declarations he liked, transmitted to the Government directly, or through me, or in both ways.

This clash was by no means encouraging, but I felt sure that Dr. Anderson on mature consideration would see the advisability of following instructions, protecting himself as I had suggested by putting his disapproval on record and assuming the position that he considered it his duty to carry out orders, irrespective of his opinion of their wisdom.

# CHAPTER XI

## MIDWINTER TRAVEL AND PREPARATION FOR SPRING WORK, 1914

THE meeting with Dr. Anderson had taken place at the camp of the engineer of the *Mary Sachs*, J. R. Crawford. He as well as several other members of the expedition had been hired on the understanding that they would work for the Government during six months of the year and would have leave of absence the other six, during which time they were free to trap or do whatever they wanted to do in their own interests. There had been three reasons for my making this sort of agreement with some of the men. First, they preferred that arrangement; second, it is generally inadvisable to retain in a winter camp a large number of unoccupied men, for friction will then develop and it is better to have them scattered, each on his own and doing something in which he is interested; third, it was a manifest saving of money to the Government to feed and pay a man only for that part of the year when he is useful, still having him at hand when he was needed the following spring. Yet it must be said that this arrangement, although logical, did not work out very well, and before the expedition was over all the men had been taken back on a yearly salary basis.

Proceeding east along the coast, we visited some Eskimo camps and then arrived at the winter quarters of the *Polar Bear*, now in charge of Hulin S. Mott. Besides the crew, the *Polar Bear* carried a party of sportsmen, including two scientific men, from Boston, Massachusetts, who had chartered her for a hunting expedition and had been frozen in and obliged to winter. They were Winthrop S. Brooks, Joseph Dixon, John Heard, Jr., Samuel Mixter and George S. Silsbee. Two of the original party, Eben S. Draper and Dunbar Lockwood, had gone home overland in the fall with the captain and owner of the ship, Louis Lane, and his photographer, W. H. Hudson, crossing the mountains by sled, going south to the Yukon and thence to the Pacific by way of Fairbanks and Cordova.

Not having expected to winter in the Arctic, the *Polar Bear*, when she was caught by the ice, found herself with incomplete equipment and limited food supplies. One of the great needs in this country for a party spending the winter is dog teams and sledges, and these the *Polar Bear* lacked. The variety of food was also small, and in the case of some items the party could have eaten in a week what they, through their strict rationing, made to last a year. If I remember rightly, their bacon allowance, for instance, was less than a quarter of a pound per man per month. About the only things they had enough of were sugar and flour, and I remember their telling me, with the enthusiasm of a great discovery, that they had never imagined a "sugar sandwich" would taste so good. On occasions when I was there the sugar sandwich came at midnight —two slices of bread with granulated sugar between.

This group, four men from Harvard and one from Leland Stanford, impressed on me more forcibly than any other single instance, although I have seen many cases of a similar kind, the superior adaptability of young men of the college type as compared with those of the type of sailor or ordinary laboring man. There were also in the party one or two young high school boys from Seattle, and Mr. Mott himself was an excellent sort. Accordingly, I heard no grumbling, but some of my companions who associated more with the sailors told me that there was a great deal of dissatisfaction with the food. Much of the conversation of these men was about what fine things they were used to eating. In other words, what struck the college men as an adventure involving the interesting discovery that a sugar sandwich could be as delicious as anything they had ever eaten in Beacon Street, struck the sailors as a physical hardship and social indignity.

Going east from the *Polar Bear* fifteen or twenty miles, we came to the steam whaler *Belvedere* in the ice a mile or two offshore. She carried among other things supplies which she had intended to land for our expedition at Herschel Island. She was now so short of certain kinds of food herself that she had already arranged with Dr. Anderson for the use of some barrels of salt beef and salt pork of ours, for which she was to pay by giving the expedition bacon the next year. As this bacon was to be sent in from Seattle, its arrival in time to transfer to our ships at Herschel Island in August, 1914, was very problematic. Considering it as too much a bird in the bush, I asked Captain Cottle to give us instead something which he had actually on hand, so he arranged payment in flour and canned milk, of which the *Belvedere* had a superabundance.

It turned out that my distrust was well-founded, for although the bacon had been ordered and an attempt made to send it in, it did not arrive in time for connections at Herschel Island. As for trading salt meat for flour, that I was delighted to do; on the basis of market values in Seattle and at the prices which then prevailed, the food value of a dollar's worth of flour was far greater than that of a dollar's worth of salt meat. Furthermore, having always looked upon the Arctic as abundantly stocked with meat, I have never seen the use of bringing any in. What we had brought was in deference to the food tastes of our sailors. Personally I have none too much sympathy with a man who has an abundance of caribou meat and must have bread with it, but I have far less with a man who, having caribou meat, wants to change off to salt beef now and then. A great advantage, too, of flour over salt meat is that it is far more satisfactory for emergency dog-feed. It is not an ideal dog-feed, but mixed with other things it can be cooked up into a passable ration, while salt meat cannot be fed to dogs without the bother of soaking it first in several changes of water, and in the Arctic in most places water is in winter one of the hardest things to get.

At the *Belvedere* I spent Christmas very pleasantly with Captain and Mrs. Cottle, old friends. There was no hurry about getting down to Herschel Island, for I learned from Captain Cottle then that the police did not intend to send their mail out before the New Year.

A day's journey east from the *Belvedere* was another old friend, "Duffy" O'Connor, who had been landed there with a trading outfit by a ship which had later gone away and left him. His goods consisted largely of articles which our expedition needed badly. He was not making much of a success of the trading venture, for the compulsory wintering of the *Belvedere* just west of him had given him a competitor that he had not counted upon. So it suited O'Connor to sell out to me, and I arranged to purchase the lot for eight thousand dollars, a cheap price for the locality at the time, although high as compared with prevailing wholesale prices in the trading centers of the world.

Ten miles east of O'Connor's place, Captain Martin Andreasen was wintering with the *North Star*. He also was an old friend and a man who had been trading in these regions for a number of years. I had met him last at Point Atkinson east of the Mackenzie when I spent several days at his camp there in 1912.

Captain Andreasen and his ship, the *North Star*, were exponents of not exactly a new but nevertheless an uncommon theory of arctic navigation. The one idea familiar to those who read arctic books is that a ship for ice navigation should be tremendously strong, tremendously powerful, and shaped in such a way that she has a chance to be lifted up by ice that presses around her. This is the theory upon which all explorers of late years have worked. The traders who navigate the Beaufort Sea do not work on any such principle, nor, in fact, on any principle at all, except that of using commonsense and then taking their chances with almost any kind of craft.

For instance, when Captain Cottle was in command of the *Ruby*, in 1915, he loaded her so heavily with a deck cargo of lumber that her hatches had to be battened down and even in a quiet sea she had eighteen inches of water over her decks. In other words, he was navigating a sort of submarine. This would have been considered a very heroic or a very foolish thing for an explorer to do, but in a trader it attracted little attention. In addition to his crew Captain Cottle had with him, as was usual, his wife, and on that particular trip he also had Mr. and Mrs. C. Harding, who were going to establish a trading post for the Hudson's Bay Company at Herschel Island. Of course he could not have got in with the *Ruby* in 1915 had it been an unfavorable ice season as in 1913. But in he did come, landing his passengers and his cargo safely at Herschel Island.

Such navigation as that of the *Ruby* cannot be said to be based on any system, but Matt Andreasen and the *North Star* had a system that was very definite. The basic idea is that on most of the north coast of Alaska and north coast of Canada the ocean is shallow inshore, with a number of rivers in the spring bringing warm water from the land to melt away the inshore ice. It happens frequently that while the heavy ice still lies offshore so strong that no ice breaker yet constructed could possibly get through it, there is a lane of thaw water along the land through which a boat of very small draft can worm her way, following the beach. Andreasen had purposely built the *North Star* to draw only four feet two inches of water, loaded, and in place of a keel a centerboard that could be withdrawn into the body of the ship. He had demonstrated through several seasons that he could wriggle along faster than strong whalers could bunt and break their way eastward.

Andreasen had made no attempt to build the *North Star* strong, for he had a method of which he may have been the inventor, of dealing with the closing in of the ice around her. The ship was only about fifty feet long and could turn around almost in her own length. When he saw the ice closing in and there seemed to be no chance of getting out of the way entirely, he would select in the neighborhood some big ice cake that sloped down to the water's edge on one side. He would then steam full speed against this floe. The bow of the *North Star* was so shaped that instead of hitting the ice a hard blow, she would slide up on it, standing level because she had a flat bottom. Thus by her own power she was able to put herself half-way on top of the ice. The crew were prepared to jump out, fasten an ice anchor, and with blocks and tackle to haul the ship entirely up on the floe, so that when the ice cakes closed in and began to crowd each other their pressure did not come upon the ship but merely upon the ice on which she was standing. If this was a solid piece it was likely not to break, and as a matter of fact, on the one or two occasions when Captain Andreasen had been compelled to use this method the ice selected had stood the test. Later when it slackened out and there was a chance to continue navigation, a small charge of powder placed in an augur hole in the ice would shatter the cake and let the ship down into the water again.

I have always been temperamentally inclined to deal with natural difficulties by adaptation and avoidance rather than by trying to overcome them by force. The Andreasen idea of ice navigation was congenial and its application convincing. Since I had first seen the *North Star* in 1912 I had admired her and intended to buy her some time if I could; for with my theory that a white man can live in the Arctic anywhere, supporting himself and his men and his dogs by hunting, a little ship like the *Star,* though she is capable only of carrying about twenty tons of freight, is as good as a much larger ship would be to those who work on the carry-all system. Accordingly, I now arranged to buy her from Captain Andreasen, along with his entire trading outfit, and at a price under the circumstances equally reasonable with O'Connor's.

Through buying the O'Connor and Andreasen supplies and through purchase and exchange of goods made with Captain Cottle and Mr. Mott, I now had supplies enough so that the entire program reported to the Government from Point Barrow could be carried out, with a remainder for Dr. Anderson to take east with him into Coronation Gulf that was larger than his total supplies for that purpose would have been had the plans not been altered when I came to Collinson Point.

Our arrival at Herschel Island at the Royal Northwest Mounted Police barracks was just before the New Year. The post was under the command of Inspector J. W. Phillips, and he and the men under his command did everything to make our party welcome. This was their natural disposition as well as a part of the hospitality common in the North, although they had also received instructions from the Commissioner of the Royal Northwest Mounted Police, Colonel A. Bowen Perry of Regina, to coöperate with the expedition in every way they could.

The police patrol was starting in a day or two for Fort Macpherson, which lies a little over two hundred miles to the southeast up the Peel River, just above the head of the Mackenzie delta. This patrol, made by the Inspector himself and Constable Jack Parsons, I was able to share. The journey revealed both men temperamentally and physically well adapted for the sort of work they were doing. It is certainly true that the Royal Northwest Mounted Police is a force of men with a remarkably high average from whatever point of view they are regarded, although they naturally vary among themselves and do not in every case come up to storybook standards. But these two could scarcely have been better adapted to the work they were doing, a corollary of which is that they liked it and liked the country. Parsons has never left it since, although he left the Mounted Police service and is now a trader in the employ of the Hudson's Bay Company at Cape Bathurst. Inspector Phillips had been north before and this was his second assignment to the Arctic coast. He made every effort to stay there as long as he could, and when eventually ordered out he was able to get his superiors to send him back North again. Just now he is not in the North, however, and admits that the country does not come up to what it used to be. The climate and topography are still the same but, as the Inspector puts it, "the place is getting too damned civilized."

I found on this trip that Inspector Phillips had the important qualification of being genuinely interested in everything that pertained to the natives. At first he had a hope of being able to learn the language, but after a discussion of this subject with me he gave that up and confined himself like all the police inspectors before him, to the use of the jargon, a sort of "pidgin English." *

About the only people for whom it is practicable to try to learn Eskimo are missionaries who expect to devote their entire lives to the field. The principles of the language are entirely different from those of European languages, and in order to talk Eskimo you have first to adopt in general a different mode of thought. Then, like most "primitive" languages, Eskimo is so highly inflected that all the complexity of Greek declensions, conjugations and grammar gives but a faint idea of it. Further, between ten

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* See V. Stefansson: "Vocabulary of the Herschel Island Eskimo Jargon," published in the *American Anthropologist,* April-June, 1909.

and fifteen thousand words are used in everyday speech, which is a far larger vocabulary than is employed to-day by persons speaking any ordinary European language. When you combine the peculiar mode of thought with the complexity of inflection and extensiveness of vocabulary, it is seen to be a task of intense application for many years to get a command of the language.*

It is not so strange, therefore, as it seems at first sight, that there are white men who have resided for thirty or forty years on the arctic coast, with Eskimo wives and grandchildren, who nevertheless have so small a command of the language that when their own wives talk to their own children they have often no idea even of the subject they are talking about. Of those who have been long resident the exceptions known to me are Mr. C. D. Brower of Cape Smythe, and about five or six missionaries who during the last twenty or thirty years have worked in Alaska and northern Canada. Of the three expeditions with which I have been connected, Mr. Leffingwell, the commander of the first, and Mr. Jenness, the anthropologist of the present one, are the only men who have even tried to learn anything beyond the jargon. With Mr. Leffingwell, who is a geologist, the language was a pastime, but Mr. Jenness needed it in his studies as an ethnologist and acquired in three years a better command of it than I was able to in my first three.

Inspector Phillips turned his interest to the customs, beliefs and mode of thought of the Eskimos as he could get them through interpreters, and for that purpose he made good use of me while we traveled together towards Macpherson, visiting Eskimos along the road and talking with our own Eskimo companions. Two bits of information that came out on the journey seem interesting enough to relate.

One evening Inspector Phillips and I were discussing the question of whether the missionaries as a whole had done a great deal of good in the country. Taliak, an Eskimo I had just hired who had lived for a year or two with one of the Church of England missionaries, listened to the discussion and gathered from it that we were not as favorable in our attitude towards the missionaries as he thought we ought to be. As with any other Eskimo, the intensity and sincerity of his newly-acquired religious opinions are beyond question. He also wants it distinctly understood that they are beyond question. Phillips and I had not been paying special attention to him and had not noted that he was getting angrier and angrier, until out of the corner of my ear I heard him say to Siksigaluk, the Inspector's interpreter, that there would be no Eskimos living to-day in the Mackenzie district if it had not been for the missionaries. That remark I repeated to the Inspector, and suggested that if he cross-questioned Taliak he would probably get at first hand some views about the missionaries that would be quite as interesting as any he could get from me.

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* See discussion of the principles of the Eskimo language in Chapter XXIV of "My Life With the Eskimo," Macmillan, 1913.

So we turned to Taliak and asked him what he had meant. He said he had merely made a remark in Eskimo to another Eskimo, one not intended to be taken up or discussed with a white man; and it took a good deal of pressure to get from him what he had in mind. But it finally came out that he considered it well known that a few years ago there was a large body of armed white men over in the Yukon valley in Alaska who had come there for the purpose of making a foray across the mountains into the coast land to kill off all the Eskimos and take their land for occupation by white people. This purpose would undoubtedly have been carried out if it had not been for the missionaries, who induced the Government to send the Royal Northwest Mounted Police into the country to protect them.

At first this seemed so grotesque that it was difficult to determine any foundation for it. The explanation turned out to be a garbled version of the incipient dispute between the United States and Canada as to the location of Herschel Island, it having been originally assumed by the American whalers that the island was on the Alaska side of the International Boundary, and accordingly that the Canadian Government had no authority over them when at their winter quarters. The United States Revenue Cutter *Thetis* was sent to Herschel Island in 1889 to determine the position of the island, and found it to be well within Canadian territory. Later the missionaries were doubtless in part responsible for getting the first detachment of police sent in to Herschel Island to establish Canadian law among the American whaling fleet there. From this boundary dispute and this effort of the missionaries to get police sent in, Taliak and apparently all the Eskimos of the district had got the idea that the police were protecting them from the incursion of an army or a horde of armed people who desired to dispossess them of their land.

Another interesting point that came out on the patrol journey was that the Eskimos had a very definite opinion as to why the summer of 1913 had been such a very bad ice year. Siksigaluk, the police interpreter Eskimo, told us that during the summer when a large number of his people were at Herschel Island awaiting impatiently the arrival of trading ships from the west, and when in their daily walks to the top of the island they kept finding that the ice was jammed in against the land to the west of them, Mr. Young, lay missionary of the Church of England, told them that probably the Lord had sent the ice to keep the wicked scientists in the *Karluk* from getting into the country. From this remark the Eskimos had deduced, and very logically, that the same ice that was sent to keep the scientists out of the country had also kept the trading ships out. For this reason the community were very resentful against us for the non-arrival at the island of the *Belvedere, Polar Bear* and *Elvira!*

Later on at Fort Macpherson I saw Mr. Young and found that he denied, no doubt with entire truth, that he had ever made any such remark. However, the Eskimos got the idea somewhere, perhaps from their own inner consciousness, and the fact throws an interesting light not only on their mental status but on the somewhat external Christianity which they have espoused so warmly.

Just as children may be kindhearted, attractive and in every way charming and still believe in Santa Claus or even in Jack the Giant Killer, so the Eskimos are no less a delightful people for all their childlike notions. In common with nearly all other observers, I find them less charming as they grow more sophisticated, but this should not be charged against the missionaries, for the sophistication is only in small degree their work. It is the aggregate result of the intercourse of the Eskimos with all sorts of white men, and not the particular result of their intercourse with missionaries, which is changing them gradually into a less attractive and less fortunate people.

The second day out from Herschel Island on the journey towards Macpherson we overtook in a deserted Eskimo house Storker T. Storkerson, who had been first officer on the schooner *Duchess of Bedford* in 1906-07. This was the expedition with which I had been connected as anthropologist, having intended to join it at Herschel Island in the summer of 1906. On that occasion I had come down the Mackenzie River and arrived at the appointed rendezvous in August, waiting there until September for the expedition. They never got through that far, however, for the freeze-up overtook them at Flaxman Island, where the ship was eventually broken up to build the house in which Leffingwell, one of the joint commanders, afterward lived for many years and where he had recently entertained us so hospitably.

Storkerson was traveling alone. His family was living in the forested section about half-way up the Mackenzie delta, where he had left them to make the round journey of about five hundred miles to Captain Andreasen's trading establishment near the International Boundary. He was now on his way back home from what had been a hard trip, for he had lost some of his dogs by disease and had been compelled to harness himself to the sled to help the remaining animals haul the heavy load. From the first it had been my intention to try to engage Storkerson, who was about the best "all around" man it was possible for the expedition to get. I now found he had not been very prosperous in his trapping and had been spending his money quite as fast as he made it, so that he was glad to give up trapping for a while and join forces with us. There was enough of the poet about Storkerson so that he could see as well the romantic side of the search for undiscovered lands, and of such forays into the unknown.

On the way up the delta I found that for purposes of negotiating with various residents I had to travel rather more slowly than the police, and they preceded us to Fort Macpherson. About half-way up, in the same neighborhood in which Storkerson lived, were two white men, Peder Pedersen and Willoughby Mason, with whom I spent several days. They were on a diet restricted by the circumstances of the entire neighborhood.

It seems that the previous summer most of the Eskimos had made journeys either to Herschel Island to meet the traders, or to Fort Macpherson to meet the missionaries, during the time when they should have been fishing. When they returned to their fishing places the "run" for the year was largely over, and as a result nearly everybody in the delta was short of fish and on the verge of starvation. Fish are hard to catch in the delta in mid-winter, and it was a very bad rabbit year. Moose are uncommon and caribou usually absent. There was no danger of anybody actually dying of hunger but there was more than a possibility that some of the dogs might starve. Mason had come down the Mackenzie a few years before as a member of a party of prospectors who had with them two horses and carried a large quantity of corn for horse feed. The first year they had made hay for the horses with scythes (this was about two hundred miles north of the arctic circle, by the way) and had fed them during the winter on hay supplemented with corn. During the second summer they had come to the conclusion that their "prospects" were not going to yield much gold, some of their companions had left the country, and the horses had been turned loose to forage for themselves. According to native report, the horses survived much of the winter and it is probable that they were eventually killed by wolves. The thing pertinent to our situation was that about the only food of Mason and Pedersen was boiled corn from the stock originally brought in as horse-feed.

I was Mr. Mason's guest for about a week. This diet was a new adventure, and I took to it enthusiastically. Two companions of mine were also guests, one the sailor Louis Olesen, whom we had picked up in Nome, and the other the Eskimo boy Taliak, whom we had engaged on the coast. Both of them objected to living on corn, the Eskimo because he preferred meat, and the sailor because he was not a horse and had not joined the expedition to live on horse-feed. That attitude amused both Mason and me a good deal, and I think that while Olesen was there the diet was more strictly confined to corn than would have been the case otherwise.

During that week I worked out pretty clearly the details of the delta survey program for the coming spring. I bought from Mason a gasoline launch which had belonged to his mining outfit. This launch, the *Edna,* was of the "tunnel-built" type, thirty feet long, and her speed was said to be sixteen miles an hour. She had an excellent reputation with the Police, who had seen her come to Herschel Island (which necessitates from forty to sixty miles of ocean voyage, according to which branch of the delta one uses), and she had an adequate supply of fuel. Pedersen, who said he had been engineer on a gasoline tug in the harbor of San Francisco, was hired to put her in condition and to operate her. He and the boat were to be at the service of Chipman during the spring, while Cox was to have a smaller launch purchased from the *Belvedere.* Between the two survey parties and the two launches a good beginning would be made on the survey. The Mackenzie delta is a mass of islands and tangled channels like the delta of every great river, and it was not reasonable to hope that a survey of all the channels could be made. But the experience of local white men and Eskimos had already shown which channels were the most hopeful for navigation by big ships, and these I expected to get mapped and sounded.

Although out of chronological order, I will say here that this program was practically carried out, although it developed that Pedersen's knowledge of engineering when running the gasoline launch in San Francisco had been confined to his ability to start and stop an engine that was in perfect condition and to hoist a distress signal when anything went wrong. Nothing went wrong with the *Edna,* except that there was too much oil in her cylinders and the "timing" of the electric spark was not quite right, but these simple difficulties were not understood; she could not be used at all that summer, and Chipman had to do what work he could with a whale-boat. This cut down the extensiveness of his work by much more than half. The other launch with Cox in charge did excellent work, for he himself was a good engineer, thanks to which the aggregate of the work done by the two parties was almost as great as I had hoped, including the sounding of one channel with evidence that a ship drawing six feet of water can enter the Mackenzie from the sea. This together with what we know of the navigability above the delta shows that a ship drawing six feet of water can steam fifteen hundred miles up the river from the sea to the rapids at Fort Smith.

In addition to buying the launches for the two survey parties, I secured from the Mounted Police a quantity of provisions which were cached at strategic points in the delta, and made all necessary arrangements for the prosecution of their work.

# CHAPTER XII

## THE COLLINSON POINT DIFFICULTIES

SO far as my personal plans for ice exploration were concerned, the engagement of Storkerson had set them a good deal forward, for they demanded a few very good men rather than a large number of ordinary ones. As soon as I could see clearly what the program in the delta would be, I wrote out a summary of it to transmit to Dr. Anderson so that the topographers, Chipman and Cox, and O'Neill, the geologist, would know what facilities they might expect to work with. I also wrote out a second letter of instructions, giving in detail the plans for the outfitting of my own party for the journey north over the Beaufort Sea.

Directions were that the outfitting base should be at Martin Point, about forty miles east of Collinson Point and fifteen miles west of the *Polar Bear.* Storkerson's advice about the outfitting was to be followed in general, but in order not to disarrange Dr. Anderson's routine, I asked him to put Chipman or some of his other men in direct charge of that work. Various details of preparations were included: tents of silk or Burberry were to be made or altered, the sounding machine was to be overhauled by the marine biologist, Johansen; watches, purchased for use as pocket chronometers, were to be carefully rated, and any chronometers which the topographers could spare me from their outfit were to be rated and put aside for my use. Storkerson was to be given the use of several dog teams and the men to handle them, certain supplies were to be hauled from Collinson Point to Martin Point, and other supplies from the *Belvedere* and *Polar Bear.* Everything was to be ready by the first of March for our start north over the ice from Martin Point.

When these letters were completed, I gave them to Storkerson to take to Collinson Point, giving him Olesen and the dog team, while I purchased other dogs in the delta and kept the boy Taliak with me.

When Storkerson started towards Collinson Point I proceeded up the river to Fort Macpherson where I completed my dispatches to the Government, giving details of how the program which I had already sent to them from Point Barrow was being carried out. During this time I had the opportunity of many pleasant chats with my oldest friend in that country, John Firth, whom I had known since 1906, as well as with the police, missionaries, and traders both of Macpherson and of Red River. All of them were as helpful as possible and greatly interested and as a result, I explained our plans more in detail to them than I did to most other people. It may be for that reason that later on, when we had disappeared from sight into the ice north of Alaska and were supposed to be dead by Eskimos and whalers as well as by the members of our own expedition (and by the arctic explorers in Europe and America to whom the Ottawa Government later referred for an opinion), Inspector Phillips and Mr. Firth were among the few who stuck to the idea that our plans were sound and that we were probably alive.

One of the reasons why I had always wanted Storkerson as a member of the expedition was that I had full confidence in his energy and judgment in carrying out orders. So far as the preparation of the equipment for the ice work was concerned, he was a far better man than I, and the best thing to do in that regard was to leave him alone. Dr. Anderson having been directed to put at Storkerson's disposal facilities ample for carrying out all instructions and plans for the ice journey, there was no need for me to hurry back to the outfitting camp. It was enough to arrive at Martin Point about the time when everything was ready, since a day or two of rest would be all I should require before starting out upon the ice.

So I was able to be leisurely about completing the work in the Mackenzie, but once it was done I started promptly westward. On the third or fourth day, about fifteen miles west of Herschel Island, I met several sledges proceeding eastward. When I saw that they were ours and recognized the men with them, I realized I was facing the most serious development of the expedition so far. For some of these were men who should have been now employed at Martin Point, getting things ready for the ice trip. The written directions had been definite, and yet they had not only not been carried out, but things were being done incompatible with both their spirit and letter.

J. J. O'Neill, geologist, proved to be in charge of this party. He brought me a letter from Dr. Anderson. I asked O'Neill to walk with me back to the police barracks at Herschel Island, allowing the sledges of his party as well as my own to precede us there. It seemed best to say nothing more to him before reading the letter.

As we walked I read it. Together with O'Neill's answers to occasional inquiries where some point was not quite clear, the letter made me understand that our situation could scarcely have been worse. Dr. Anderson, my second in command, acknowledged the receipt of my instructions brought to him by Storkerson and said that, after consultation with the scientific staff and with the other members of the expedition, he had decided not to obey them. He himself and the rest were of the opinion that my proposed journey north over the ice was a "stunt" to get me newspaper notoriety; that no serious scientific work was intended; and that if any were intended none could be accomplished on any such plans as I was contemplating. They considered themselves justified not only in withholding assistance for this journey, but also in preventing me from using any supplies that were at Collinson Point on either of the ships *Alaska* or *Mary Sachs*.

The letter then referred to the supplies of the expedition being carried by the *Belvedere* and said that the writer and the scientific staff would protest against Captain Cottle's turning any of these over to me, and would take the position that if I used any of them it was "a criminal misappropriation of Government property." The criminal part must have been that Dr. Anderson interpreted the Government's instructions to mean that I had no right to these supplies for any work except that in the vicinity of Coronation Gulf, and my using any part of them for the ice work would be disobedience to the Government.

The wording of the letter, while it showed by its violence that it had been written in what might be fairly termed "the heat of passion," left no doubt of the full sincerity of its writer and the staff. They were no stage villains bent themselves on being criminal. In their own esteem they were acting in the public interest in trying to forestall misuse of public property. In the interests of science they were preventing a foray into a frozen ocean which in their opinion could yield no knowledge, predestined as it was to failure through inadequate plans; and in the interests of humanity they were discouraging a venture which, if carried as far as I said I intended, would lead to multiple death through freezing or starvation.*

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* Dr. Anderson's letter later had the following history. On leaving land for the ice trip March 22, 1914, I left it, with other valuable papers and a

After I had read the letter, a conversation with O'Neill added light. Apparently members of the expedition had been discussing both with the local Eskimos and with the whalers my plan of walking north over the frozen ocean with intent to depend for food and fuel on the animals we might find. The Eskimos considered the project suicide, saying that seals and polar bears would not be found at any great distance from land, and that we should inevitably starve if we did not lose our lives through some accident of travel over the broken and continually shifting ice. The whalers were of the same opinion. The members of the expedition then felt no doubt of the substantial insanity of my project, and no doubt that they were justified in taking steps to prevent me from carrying it out. They were quite sincere in their opinion that the Government at Ottawa and public opinion in general would sustain them in that position.

A little quiet discussion with O'Neill shook his confidence a good deal. Before we arrived at the police barracks he told me that his mind had been changed so far that, although he could not very well go back on his agreement to stand by the rest of the Collinson Point people in their opposition, he would at least go so far as to give me his pocket chronometer.

And then it came out that one of the conclusions reached by

small sum of money belonging to a member of the expedition, in a locked iron box of which I had the key. This box was later placed in charge of the Royal Northwest Mounted Police at Herschel Island. During the spring of 1914 the opinion grew stronger that my companions and myself had died out on the ice. This opinion was held, with two or three exceptions, by Eskimos, whalers and members of the expedition who were at Herschel Island. On the theory that I was dead, my iron box was broken open. One reason assigned for this was to get for the owner the money which the box contained (I think about twenty dollars).

When I arrived at Herschel Island a year later, Inspector Phillips of the Royal Northwest Mounted Police turned over the box to me with the explanation that it had been broken open by Dr. Anderson. I missed nothing from it except the money, which had been given to its owner, and the letter.

Desiring the text of this letter for the completion of the records of the expedition, the Deputy Minister of Naval Service of Canada in 1919 wrote to Dr. Anderson asking him for a copy of the carbon which, since the letter was typewritten, he presumed the writer had retained. Dr. Anderson replied that he had kept no copy. He also stated to the Deputy Minister that my box had not been broken open by himself but by Wilkins. Wilkins was asked if he had broken open the box. He replied he had not; and he did not really know who had, but had always understood it was Dr. Anderson. I referred the matter again to Inspector Phillips. He says he is prepared to say both that he told me Dr. Anderson had broken open the box, and that he believed Dr. Anderson opened it, but that he cannot say positively that he knows he did. Anyway, the letter is lost.

the staff at Collinson Point had been that I should probably be unable to get a pocket chronometer, and that if they were to refuse to turn any over to me I should be thereby prevented from going out on the ice. Certainly to go without a chronometer would not only put our lives in extreme danger, but would prevent us from being able to say at the end of the journey accurately where we had been. This would rob any soundings we might take, for instance, of most of their scientific value.

O'Neill's decision to give me that chronometer really turned the tide for me, for the chronometer point was the only one where I felt myself legally weak. The expedition was under the Naval Service, but the chronometers were the property of the Department of Mines, and had been handed by them to the men who carried them, who could make a claim on that ground that they were not part of the equipment of the expedition proper and therefore not subject to my requisition.

This watch was the one we relied on in our successful ice journeys of the next several years and without which they could not have been made. I have felt that O'Neill's handing it to me without either request or demand of mine was a pretty fine thing, in view of the fact that he seemed to be sincerely convinced that our undertaking was stupid and was doomed. Only, he had the sporting fairness to feel that he did not want the mere lack of a reliable timepiece to prevent my having a chance to try it out.

O'Neill said in our conversation that before he and the other members of the Geological Survey left Ottawa the question had been discussed between them and their superiors as to what they were to do if Stefansson's conduct of the expedition did not appear to them to be the right one. He said that they had been assured that if they thought it advisable to disobey my orders, their position would be sustained at Ottawa. A day or two later O'Neill made that statement again to the police at Herschel Island, adding that from the point of view of the Geological Survey, he and several of the other men were mere passengers on my expedition and not subject to my orders beyond their own discretion. At Nome several months earlier O'Neill had said the same thing to Mr. Jafet Lindeberg and others, and it had been reported to me. I discussed it with the representative of the Naval Service, Mr. George Phillips, who advised me to dismiss the entire portion of the staff that had been furnished by the Survey. My conviction then was, however, that this was mere talk on the part of the men and that in their own interests they would refrain from bringing it to an issue.

Furthermore, I knew that the Chief of the Survey, Mr. R. W. Brock, had never intimated in any way to his men that they would be justified or supported in disobeying orders. O'Neill admitted, in fact, on being questioned that it was not Mr. Brock who had said this, but some one whose name he declined to give.

O'Neill's purpose in coming with the present party was to proceed up the Firth River for a survey. This was the survey planned and outlined in my dispatches to the Government from Point Barrow, and was one of the points where the plans as outlined by Dr. Anderson coincided with plans as outlined by me. I had every interest in seeing the project itself carried through; what had disturbed me on meeting O'Neill's party was not that it should be on its way but rather that it should have in it Captain Bernard and Louis Olesen, both of whom should then have been engaged in helping Storkerson with the outfitting for the ice trip. Instead of these men O'Neill should have had with him other white men and local Eskimos with their dogs, an arrangement that would have served quite as well.

Captain Bernard and Olesen now faced the unhappy question of whether they were going to obey my orders or Dr. Anderson's. Olesen took the position that Dr. Anderson was his real commander, there having been two expeditions with two independent heads, myself in command of the *Karluk*, and Anderson of the *Alaska* and *Mary Sachs*. Captain Bernard expressed the opposite view, so I did not argue Olesen's, for O'Neill had to have somebody to help him with his geological work and my opinion of Olesen was such that I was well pleased to let somebody else have him.

It had been O'Neill's intention to proceed forthwith up the Herschel River, but as he had, in common with most of the men at Collinson Point, spent the entire winter in the house, he was so "soft" and became so badly laid up with the fifteen-mile walk from where he met me to Herschel Island that his departure for the mountains had to be deferred several days. Such "softness" is the inevitable result of the time-honored polar explorer custom of spending the winter in camp whether in study (where the officers teach the men), theatricals, and the publishing of busy-work newspapers known as Boreal Bugle or North Polar News, as was done by the British expeditions from Parry to Nares; or whether in reading, listening to phonographs and writing reams of home letters for next summer's mail, as has been the custom on recent expeditions. Such idleness makes muscles flabby and (what is worse) breeds discontent, personal animosities and bickerings of all sorts. That is one reason why I seldom spend more than a few days in any winter camp. Another reason is that there is always plenty of work to be done.

The following morning Captain Bernard and I started west along the coast and arrived that evening at Captain Martin Andreasen's, near the International Boundary, a distance of over forty-five miles. This is much more than an ordinary day's travel when one is carrying even moderately loaded sledges, but I had learned from O'Neill that our preparations at Martin Point were about a month behind schedule, so there was every reason for hurry.

Captain Andreasen told me that on their way east O'Neill's party had stopped there and told him of the disobedience of my orders at Collinson Point and had informed him that the Government would undoubtedly, when they got the reports which were being sent in from Collinson Point, disavow all my actions. In particular they told him that if he sold me the *North Star* he would have to "whistle for his money," for the Government would never pay the draft. He said the idea had struck him pretty hard at the time but he had thought it over since and decided that he would take his chances. For one thing, he believed the draft would be paid; and for another, he could see that my plans of exploration would be seriously handicapped if I could not get the *North Star* and he said he was enough interested in the project to be willing to take some risk to see the work successful.

At Andreasen's I received a letter from Captain Cottle, sent to meet me to warn me of conditions. He said that members of my party had come to the *Belvedere,* had explained to him that the Government would not make good any arrangements I might make with him, and had endeavored to dissuade any of his men from helping us in any way. He said that he had, however, paid no attention to this and had assured his men that should I want their services I should be able to pay for them, and that he would himself pay them any bills which I might be unable to pay. Captain Cottle had also had an interview with "Duffy" O'Connor. O'Connor had been talking with members of the expedition and had decided to go back on his bargain to sell me his supplies, the reason being that he now feared non-payment of the draft that I was going to give him in return for the outfit. Cottle said he had assured O'Connor that the draft would be paid and urged him to stick to his bargain, saying that I was the commander of the expedition and that the Government would undoubtedly stand by whatever I did.

This letter prepared me for my interview with O'Connor the next day. It seemed he had had several changes of mind. First, he had agreed in good faith to sell me the supplies; second, he had decided not to sell them when he heard from members of my expedition that I had no authority to buy them; third, he had decided he would sell them after all when he had talked with Captain Cottle; and, fourth, he had finally decided that perhaps he had better not sell them, for after all it was about an even bet whether he would get drafts issued by me paid or not. After some talk, however, and after his raising the price slightly to compensate him for the risk he now thought he was taking, I eventually closed the bargain.

That same evening at the *Belvedere* I got more details of how everything was going. Captain Cottle had sent three or four of his men to help Storkerson with the work at Martin Point and had supplied him with everything he could spare. His influence had been especially useful in keeping our credit good with the Eskimos, who might otherwise have been afraid to work for Storkerson, thinking they would not get paid.

When I got to the *Polar Bear* I found that feeling ran pretty high. After telling me what they thought of the conduct of my people at Collinson Point, several of the party volunteered to do anything for me they could in helping on shore with the preparations. Four of them also volunteered to go with me out over the ice if I should be unable to get enough satisfactory men from my own party. To make this definite, Mott handed me a letter saying that himself, Heard, Mixter and Silsbee would go with me wherever I would take them and that all supplies or resources of theirs were at my disposal.

At Crawford's I met Storkerson. He confirmed everything told me by O'Neill and everything I had learned since, adding a good deal thereto. Several dog teams had been standing idle in our barn at Collinson Point. He had asked for some of these to use in preparations for the ice work but had been refused. Natives who had been willing to help him had been discouraged from doing so. No preparations had been made at Collinson Point and nothing had been done looking towards any possible ice journey we might make except that Mr. Chipman was rating some watches I had purchased from Captain Andreasen and sent to him for that purpose, and Mr. Johansen had overhauled the sounding machine, doing his best to put it in working order. Dr. Anderson had refused to hand over to Storkerson any of the supplies I had asked for, but had given him some socks, mittens, etc., for his own use, telling him distinctly that he was not doing that in obedience to any instructions from me but that these garments were presents from him to Storkerson. Storkerson could not say too much of the help given him by Captain Cottle, Mr. Mott and, in fact, every one on the ships *Belvedere* and *Polar Bear*. But neither of these ships had dogs and one of Storkerson's great difficulties had been inability to hire dogs and sledges for freighting supplies from the *Belvedere* (about twenty-five miles away). He and the men he had been able to hire from the *Belvedere* and some Eskimos who were working for him had been compelled to harness themselves to the sledges, taking the place of dogs in hauling them. The very fact that they had to do this while several teams of the expedition's dogs stood fat and idle in the barns at Collinson Point, had done a great deal with the Eskimos to undermine my credit, for it seemed obvious to them from these circumstances that I was no longer in any control of the equipment or supplies of the expedition. From this they deduced that I should probably not be able to pay them if they worked for me, for, of course, Eskimos usually expect to be paid in goods.

With the friendship and help of the whalers on the *Belvedere* and the party of sportsmen on the *Polar Bear* I might almost have ignored the Collinson Point difficulty and saved the precious time it took to go there (for the season was getting late) and started off on the ice directly. But I could not do this for two reasons: First, we needed the rifles, ammunition, light tents, scientific equipment, cameras, etc., which were in our stores and could not be secured from whalers. Further, for any journey out over the ice I should need the coöperation of the various ships the following summer, and I could not leave shore before making definite arrangements for the movements of the three vessels, and especially those of the *North Star*, for she was the one I had bought for the purpose of coöperating in my explorations of the Beaufort Sea. If I left shore while my authority was being openly defied I could rely on no coöperation from the ships in future—any written orders I might send would presumably be treated like the ones already disobeyed. Especially I must arrange for the *North Star* to follow me to Banks Island, for that had become an integral part of my plans.

On the way from Martin Point to Collinson Point Captain Bernard and I spent the night with Crawford in his cabin at the mouth of the Ulahula River. I found then that while both he and Captain Bernard had at one time been dubious as to which side of the controversy they were to take, they were so no longer. They assured me that Charles Thomsen and Charlie Brooks (the steward on the *Alaska*) would be with me, and they believed Wilkins would also. It was known that McConnell, who was just then absent on a trip to Point Barrow, would be on my side when he returned. In fact, they felt that as soon as the men really thought things out and came face to face with definite action, they would probably all decide to obey orders.

We arrived at Collinson Point just about dinner time. I told the men at once that we would postpone all discussion until eight o'clock, when the evening work was done and everybody could be present.

When the time for discussion came, I asked Dr. Anderson whether he was taking the position which Louis Olesen had mentioned to me at Herschel Island: that there were two expeditions, he in command of one still in existence and I in command of the other, now defunct; or whether he was taking the position outlined by O'Neill that he and several of the other men were merely passengers with the expedition and had authority from Ottawa to disobey orders whenever they liked?

It was Johansen who answered, saying that they considered Dr. Anderson to be in command of that part of the expedition which was left, that I had had authority only over the *Karluk*, and had none in the expedition at present and had better go home to Ottawa to report the failure of my side of the enterprise. Without replying to him, I persisted in my inquiries of Dr. Anderson.

Dr. Anderson eventually answered that my position was analogous to that of certain kings of England who had been undisputedly kings as long as their conduct was worthy of a king and as long as the people had confidence in them. But when the kings of England had become either insane or criminal they had been deposed and in some cases executed. While he disclaimed any intention of an execution, he thought that I had already shown by what I had done and by the plans which I had announced, especially the much-talked-of "ice trip," that I was either not quite sane or was outlining plans which I had no intention or prospect of carrying out to any useful conclusion, but which would, nevertheless, use up a good deal of the resources of the expedition. He considered himself responsible to the Government for the carrying out of certain plans of theirs and his, and he considered that he would be unable to carry them out if he acquiesced in mine. My motive in making the journey over the ice, he felt sure, was merely a desire for notoriety. It was well known that no useful purpose could be served by it, the theory on which it was based had the support of no well-known arctic explorer or any one on the expedition, and of no whaler or Eskimo, in so far as the soundness or tenability of the basic hypothesis was concerned. If I were not prevented I would doubtless go out on the ice with several sledges; we would have as many hardships and adventures as possible within a safe distance from land, would stop when we had had enough and come back, reporting that we had made a brave attempt but that the difficulties were insuperable. To all of which farce he and the rest had made up their minds they would not be parties. They were going to report everything in full to Ottawa and felt sure that the Government would sustain them.

When Anderson's statement had been made, I asked him whether they intended to withhold by force supplies which my companions and I needed for making the proposed trip: to which he replied that there would be no companions, for no one would go with me.

Hereupon I made a sort of roll-call of the men to find out from each one whether he would obey my orders and go with me out on the ice if necessary. I began with Captain Bernard, for I knew he would say he would go. Obviously his prompt agreement surprised the others. I fear that some of the men had in a measure deceived Dr. Anderson, misleading him into thinking he would have the whole-hearted support of everybody. Besides expressing enthusiastic support of my project, Captain Bernard informed the gathering that Crawford, too, would take part in the ice trip, if desired. The break in the ranks having been made, the others followed. Wilkins said he would go; Captain Nahmens of the *Alaska* expressed willingness to do anything I might direct; Thomsen, who was not present, had sent word by Captain Bernard that he would volunteer; Johansen said he would go "if I would make him certain pledges." When I asked what those were, they turned out to be merely that he was to be allowed to do scientific work. As Johansen could never conceivably have been taken on such a trip except for the purpose of doing the sort of work which he wanted me to promise he should be allowed to do, it was a simple matter to make him that promise.

Chipman considered he could not go even for the "support party," for it would make him too late for his topographical work on shore. In this I agreed. Had we been able to start two, three or more weeks earlier, as I had planned, he could have gone out with us for two weeks and still have been back ashore before the time he wanted to start his survey work (March 20). The same considerations applied to Cox. They should have been commencing about now their coast survey so as to have the work done between Collinson Point and the Mackenzie delta before the thaws began. I had, in fact, brought with me from the Mackenzie delta (I forgot to mention above) Peder Pedersen with his dog team to pilot the topographers east. Pedersen had been about the Mackenzie delta for about twenty years and was an excellent guide.

At this point Dr. Anderson agreed that they would all cease opposing my project if I would sign a statement, making certain promises and giving certain guarantees. When I asked what they would be, he said I must promise to let all the scientific men go on doing scientific work,—not to hinder the various members of the party in doing geological, topographical, zoological or other research. In general the demands were merely that the plans which I had always wanted to carry out should be carried out. The evident purpose of the demands was to make it appear that I had been compelled to allow them to do these things, whereas it had in fact been my desire all the time that they should do them. To sign the proposed document was a willing move, for, luckily, I had sent out from Point Barrow in October, or announced before the expedition ever started, that we intended to do all the things which they now asked me to promise I would not prevent them from doing.

It was a rather tense two hours, but before eleven o'clock a *modus vivendi* had been agreed on. By eight o'clock the next morning every one was at work doing the things which he should have begun doing not the morning after I came home but a month earlier, on the morning after receiving my instructions from Storkerson.

Things done in a hurry are seldom done quite as well as when full time is allowed. Still, it is impossible to say too much for the energy and good will with which some worked with sewing machines, others with needles, others with carpenter tools, and still others classifying and packing up supplies, no one now sparing any effort to get the preparations through as quickly as possible.

# CHAPTER XIII

## SHALL WE DARE TO MARCH NORTH?

THE threatened mutiny had blown over and nothing was wholly lost save a month of priceless time. For, although autumn and mid-winter may well enough be passed in mere preparations, the precious months following January are the time for real work, and one of them was gone. There had also arisen, besides these differences between some of the men and me, bickerings among themselves that died down slowly. Old friendships were broken and wounds made that to this day remain unhealed.

The causes of the difficulty were partly genuine differences of opinion and partly personal jealousies. The variance in opinion we have explained, the jealousies are gradually being forgotten and have no place in this book.

When it had been decided that no active opposition would be made to my trip north over the ice, there came the question of whom I could get to go with me on the advance section of the trip. Of those who had volunteered the previous evening to follow orders (which really included all the men who could reasonably have been considered as material for the work), the majority were either physically ill-adapted for so protracted and serious an adventure, or else so badly needed ashore in connection with the operation of one of the ships or with helping in scientific work that they were not eligible.

For an undertaking so serious as most people considered ours to be, no man is suitable unless he volunteers freely and has a degree of faith in the practicability of what is being attempted. Accordingly, as a preliminary to asking for volunteers, I went over the whole situation discussing every argument for and against. This was in conversations with individuals, now trying to get them to change their minds, now to stick to previous decisions. But for simplicity's sake I shall present the case here as I had presented it earlier in the year when first I attempted to get the men of the *Alaska* and *Sachs* interested in our geographic program.

It was our greatest loss when the *Karluk* drifted off, that we lost with her several ambitious men whose romantic dispositions had made it their dream to undertake some forlorn hope—if it were anything unusually dangerous and difficult (so long as there was a fighting chance) then so much the better.

The first thing that had to be stated was the scope of the exploratory journey for which I wanted the men to volunteer.

Briefly, the plan was to start north from Martin Point the first week in March (later experience showed that the first week in February would have been better). We would travel north roughly along the 143rd meridian to 76° N. Latitude, if we could. If during this journey the ice over which we traveled was drifting west or northwest rapidly (4 miles per day or over), we would return from our "farthest north" to Alaska by a route which (partly because of the assumed drift and partly to cover new ground) would be west of our outbound course. We would land presumably somewhere between Cape Halkett and Point Barrow. Then, perhaps in May or June, we would follow the coast east and join our ships.

But it was always possible we might find land on this journey. If it were small, we would map the coastline roughly and return to Alaska to join our ships in the late spring; if it were large, we would spend a year upon it. If such large land were fertile and had driftwood, we would live on the caribou or musk oxen found there and burn wood for fuel during the winter; but if it lacked driftwood and was for any reason devoid of land game, we would live on seals on the coast, eating them for food and burning their blubber for fuel. The following spring we would travel, according to convenience, back to Alaska or east over the sea ice to Banks or Prince Patrick Island, where the *North Star* was to be either near Cape Alfred or Land's End, and the *Sachs* between Cape Alfred and Cape Kellett.

But if no current carried us west and if no land were found, we would, after getting as far north as possible, turn east when the approach of summer made sledge travel difficult, and land on Prince Patrick Island or near Cape Alfred (near Norway Island) on Banks Island.

On the whole trip, whatever its duration or destination, we would live exclusively by hunting after the first five or six weeks which would use up any supplies we might bring from home. The trip would last twelve weeks at the shortest and a year or two years at the longest.

This journey, all but the first fifty miles of a total distance of five to seven hundred miles, would be over an ocean area hitherto unexplored because the massing in it of ice even in summer had made it in the past impenetrable alike to exploring and whaling ships. But to our point of destination (if no land were found and if we did not drift west) there did exist a roundabout passage already charted and sailed by at least two ships—McClure in the *Investigator* in 1851 and Captain George Leavitt in the *Narwhal* in 1906. McClure proceeded along the coast of Banks Island to Mercy Bay. Leavitt returned by nearly a "great circle course" to Herschel Island. Captain Leavitt has told me that the *Narwhal* was the only ship of the whaling fleet that ever went to Norway Island, but I have heard of others which went within 45 miles of it—to Terror Island.

The *North Star*, when the summer came, was to follow this well-known route, first east along the mainland to Cape Bathurst or near it, then north to Cape Kellett. It was especially here I expected the *Star's* light draft to be valuable—she would worm her way up the coast through the shallow shore lead between the land and any heavy ice that might be grounded offshore. On reaching Norway Island (N. Lat. 73¾° approx.), she was to look for a beacon containing a message from us. If she found none she was to proceed to Prince Patrick Island if she could; otherwise, she was to winter at the most northerly convenient point on Banks Island. If we were in the east somewhere we would find her sometime during the winter or spring 1914-15. If we did not, she was to do whatever exploring she could the spring of 1915. During the summer 1915 she would return south if she had not found us.

As more fully explained later, the *Sachs* was also to come to Banks Island, though she was not to try to come as far north along the coast as the *Star*.

For a journey that might develop along any of the three plans outlined above (according to the natural conditions we found in the unexplored area), I wanted at least four volunteers—preferably more so that I might try them out while the support party were still with us, taking with me eventually those who turned out to enjoy the work most—which is another way of saying the best men. In polar work, physique is of some significance but temperament is far more important.

In order to get my four or more volunteers I had to justify the hypothesis upon which the plan of the journey was based. Part of the ground did not have to be gone over in stating the case, for up to a point our methods would be essentially those of the Eskimos or of Peary. We would use Eskimo dogs, Nome sledges (the two we had), snowhouses for camps when the weather was cold and Burberry tents when it was warmer. At the start we would cook food brought from Nome with primus kerosene stoves, in the manner of Nansen or Scott. So far there was no difficulty, no reluctance among the men.

But here strange issues arose. Other explorers had planned to turn back before the food and fuel brought along had been exhausted; we planned to go ahead without either, relying on the sea ice or on undiscovered and uninhabited lands to supply both indefinitely. This was where our plans branched off from those of previous explorers and where our men were dubious—or more than that. It was the striking out along a new path that I had to try to justify before I could expect any one to volunteer for the undertaking.

I think any lawyer or other person used to pleading a cause will agree that the first principle of good argumentation is to concede in the beginning every point which the opposition are eventually going to make you concede. Accordingly, I admitted freely at the start that my plan of traveling away from land an indefinite distance over moving sea ice, relying for food and fuel on animals to be secured by hunting, was considered unsound by, so far as I knew, every polar explorer and every critical authority on polar exploration. We were going to traverse the Beaufort Sea west of Banks and Prince Patrick Islands. This is the very region referred to specifically by Sir Clements Markham in his "Life of Admiral McClintock" as "the polar ocean without life" when he is contrasting the comparatively fertile regions around Melville Island where musk oxen and caribou can be killed on shore and where there are resources of a sort, with the region west of Prince Patrick Island which, according to him, is devoid of all things that may sustain human life.* Markham could not be dismissed as an "armchair explorer," for he had been a member of one of the successful British polar expeditions at the time of the Franklin search and had later, in his position of President of the Royal Geographical Society and leading authority on polar matters, been in personal contact with every arctic explorer of note from the middle of the Nineteenth Century, up to and including Nansen and Peary.

And, indeed, the testimony of Nansen and Peary was neither equivocal nor friendly to my hypothesis. Nansen and Johansen made their remarkable journey first north from the *Fram* and then towards the Franz Josef Island group without any plan of sustaining themselves on the road by the products of hunting. They carried rifles and ammunition and made good use of these when they got into the shore waters of the Franz Josef group, but did not rely on them at all, while on the high seas.

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*Markham says about Prince Patrick Island: "It forms the boundary between the arctic paradise of Melville Island and the polar ocean (west of it) without life." Op. cit., p. 172.

One need not go to any declaration on this point made by Nansen for his actions speak louder than words. The two of them started from the *Fram* driving three sledges, each with a large team of dogs. Any one used to dog driving would instantly object that it is not practical for two men to drive three sledges, but Nansen's answer is that they needed all the dogs they could take, for they intended to use them as food, first for each other and, in an extremity, for themselves. He looked upon dogs as portable, or rather self-carrying, provisions.

He tells us that as they struggled northward he gradually became fonder and fonder of the more faithful of his dogs. Some of them worked more consistently and single-mindedly for his success every day than he did himself. This is the common experience of all men of feeling who have used dogs in polar work. It is common experience also in more southern lands that we become fond of even the toy dogs that are useless and incapable of doing us any service. How much more affection then would one in Nansen's position have for the dogs that labored for him more faithfully day by day than any but the rarest men would have had the moral strength to do, growing hungrier, thinner and weaker with each strenuous march but never sparing their strength, never whimpering, always eager to please and to do their best.

But day by day the food became less in the sledges and the time drew nearer when some of these faithful friends had to be sacrificed on the altar of science and geographic discovery. At first he could kill the lazier ones without quite so much compunction, and this made easier because more gradual the approach to the final horror of killing the ones he most dearly loved. Our imagination makes it easy for us to fill in the gaps, and there are few, in Nansen's descriptions of his own mental sufferings as he killed these friends of his and cut their exhausted bodies into pieces of food. We all agree that his feeling does him credit, although some wonder how any goal can be worth the deliberate planning of things like these. For this had been the plan not only before he left the ship on the particular journey, but even before he left Norway. He calls these the "stern necessities of polar travel."

From the point of view of the moralist, there are many angles from which to consider Nansen's plan and procedure. But from our present point of view the lesson is clear. No man with the sympathetic attitude toward dogs which Nansen describes himself as having would have killed them for food had there been any other food available. No matter how sympathetic a man may be towards all creation, he would surely rather kill a seal that is a perfect stranger than a dog he has brought up from puppyhood and that has been faithfully serving him for months. So it is clear that there were no seals for dog-feed that Nansen might have secured with his English rifle which he tells us was so good and had cost so much. In reading his book we all accept as necessary though deplorable the killing of dog to feed dog until the last survivor was killed for the explorers themselves (presumably) to eat. For it is a commonplace of our knowledge that, as Markham puts it, the polar ocean is "without life."

It may be said about Nansen that he did not have the advantage of understanding Eskimo methods of seal hunting and possibly seals were there though he was unable to secure them. But here the testimony of Peary to the contrary is explicit.

Peary was a great admirer of Eskimo methods of travel and employed them generally in his work. In outfitting his ships, for instance, he carried on some voyages little meat and on others none at all, for he relied on his Eskimo hunters to supply him with fresh meat for his crew and food of some sort, usually walrus, for his dogs. On all of his later journeys he had Eskimos with him to build the snowhouses, drive the dogs and to do practically all the menial work. He had spent nine winters in the North when he wrote his book, "The North Pole," describing his last and successful journey. In summing up his "fundamental principles" of successful traveling over the north polar pack, he says that when you start on a journey you must have in your sledges enough food to take you all the way to where you are going and all the way back to land. He says that you must similarly have enough fuel to take you where you are going and back again to shore. He was fully aware of the fact that the ocean waters near land are commonly well supplied with game and that both in them and on the land you may expect to secure meat to eke out your stock of provisions. He always made use of this principle on his journeys, going so far to seaward that in one or two notable cases he had just barely enough food to reach land and had to get his first meals on shore from musk oxen or caribou. Peary also says that it is essential to success that your plans shall command the confidence of enough Eskimos to help you to carry them out.

There is then no denying that Peary's testimony is against such ventures as I was planning. We were going north from Alaska into the Beaufort Sea which has been uniformly described by the British explorers and by the American, Leffingwell, and the Dane, Mikkelsen—which means all the explorers who have been there—as the region of the heaviest polar ice known. This is presumably the least promising part of the whole polar regions for the method of living by forage; this is the section specifically described by Markham as "the polar ocean without life." Seals might be found in shallow waters in certain parts of the polar basin even at some distance from land but they certainly would not be found in abysmal depths. Leffingwell and Mikkelsen's soundings, taken on their journey north of 72° N. latitude in 1907, had given the presumption that the ocean north of Alaska would be deep, thus supplying with one more argument those who believed food could not be secured.

To make the case against me all the stronger, there were the Eskimos. As mentioned above, Peary thinks that it is one of the essentials of a successful journey over the moving pack that you shall have Eskimos with you. And no Eskimo in northern Alaska was willing to go with us. Many of them were good friends of mine and some had worked for me on other expeditions. Natkusiak, for instance, had been with me for four years and was anxious to enter our service again. But he specified that he would not under any conditions go out on the moving ice. And so said all his compatriots. They considered being out on the sea ice dangerous enough through the accidents that are possible when, under stress of wind or current, the ice floes crush each other, rising on edge and going through other antics that are admittedly threatening in spite of their ponderous slowness. But the main obstacle was the fear of starvation. Most of them said they would not go with us at all, and the most venturesome said that they would not consider going any farther than until half the food carried in the sledges had been eaten. They wanted to have the other half to bring them back ashore again, or to bring them at least into the familiar shore waters where there were seals.

I used to tell them that both they and we knew how to get seals and that we would find no trouble in securing enough meat for food and blubber for both food and fuel, and that it would be much easier to travel light, relying on killing bears, than to haul sledges loaded heavily with provisions. But their answer was that there would be no seals or bears to kill. I tried to argue that they had no means of knowing there would be none, for neither they nor their ancestors had, so far as we knew, been in the habit of going more than five or at the most ten miles from land. Their reply was that their ancestors never went farther because they knew there was no food to be secured on the deep sea, and that their ancestors' wisdom was good enough for them. I tried to bribe them by promising more pay for a day at sea than they were getting for a week's work ashore, and got in answer the question: "What is the use of big pay if you die?"

I could get no more support for my plans from the Eskimos than I could from geographers and explorers.

Neither were the whalers more favorable. Many of them had been in these waters for twenty years and they were all of the same opinion as the Eskimos. The reason for this was that they had borrowed their opinions from the Eskimos. It appeared to them that ideas which they had borrowed twenty years ago and had held ever since without investigation had somehow received conclusive confirmation through the mere lapse of time. They told me that it "stood to reason" and was "well known" that the polar ocean in winter far from land was a barren and desolate waste without any resources. They were far more pessimistic than any ordinary explorer, for among us as a class it is conceded that men can travel with dogs and sledges over the ice. But the whalers commonly said that such journeys as Peary's could not be made in the waters north of Alaska. Not only would the difficulties of travel be so much greater that, even granting safety, progress would be much slower, but also the ice was so mobile that you would be in continual danger north of Alaska when you might be in comparative safety on the heavy and sluggish ice north of Greenland.

The reply to their argument had to be based on the journeys of Baron Wrangel north of eastern Siberia and Leffingwell and Mikkelsen north of Alaska. Judging from their narratives and from Peary's, it is indeed much more difficult to make a good mileage near Alaska or Siberia than north of Greenland, mainly because of the strenuous currents that multiply by ten or by a hundred in the vicinity of Alaska and northeast Asia the leads which have to be crossed and which are in every icy ocean the most serious handicap that the explorer has to meet. These same strong currents break up the ice into more pressure-ridges, making sledge travel more difficult and the breakage of sleds more likely. Also when, by the opening of leads all around, you are compelled to cease traveling, the currents carry you with greater speed —usually in a direction that does not suit you—than the sluggish waters north of Greenland. But allowing all that, Wrangel and Leffingwell and Mikkelsen had at least shown that sledge travel was practicable. It was also reasonable to assume that the difficulties would be greatest near land, and would lessen when you got farther out to sea than even they had been.

The whalers were all personally friendly and willing to help me when they could. They agreed that it was "my funeral," and were anxious to see that nothing prevented our making the trial; but they were equally eager in their advice that upon the first clear evidence of the absence of game at sea we should (if we ever got started) turn back towards shore and safety. They pointed out that it is not cowardice but discretion which yields gracefully to the inevitable. Captain Cottle and some of the other whaling officers, such as Mr. William Seymour, were willing to go so far as to urge eligible young men in the crews to take their chances with us. This was because they were good friends and good sports and not because of any real confidence in our program, although I think I came nearer convincing Captain Cottle than I did almost any of the members of our own expedition.

But I had to admit that with the exception of such men as Captain Bernard, who with blind loyalty would go anywhere, Wilkins who was ready for any adventure, and my friends at the *Polar Bear* who were sportsmen in the best sense of the word and looked upon our venture as one of the sort which might work out and ought not to be allowed to fail for want of men to try it out—apart from these, I had to admit that I had secured no support and that geographers, explorers, whalers and Eskimos alike were of the opinion that our plans were unsound and that the attempt to carry them out would be disastrous.

This was the case of the opposition stated, as it seems to me, with fairness, allowing weight to every real argument. It looked like a strong case.

In rebuttal I appealed to the science of oceanography which, although not so old as some, is as well established as most of the biological sciences. Thousands of observations taken by careful men had established the principle clearly laid down, for instance, by Sir John Murray in "The Ocean" and in his larger work, "The Depths of the Ocean," that the amount of animal life per cubic unit of ocean water is least in the tropics and increases gradually as you proceed towards either pole.* This is really a fact of common observation, although the ordinary observer neglects to make the proper deduction.

The great commercial fisheries of the world are not in the tropics. We get the name sardine but not all the sardines from Sardinia. The well known fisheries are in the north Atlantic, on the Newfoundland banks, in the North Sea and on the coasts of Norway and Iceland. That is where the cod, the herring, the haddock, and the halibut come from. When the ornithologist explains to you why there is guano on a certain part of the coast of Chile, he tells you that the cold waters from the Antarctic bring in the tremendous quantities of marine animals upon which the birds live that deposit the guano. At the marine-biological station at Wood's Hole, Massachusetts, you learn that the polar current sets in to that coast more at certain seasons than at others and that marine life is most abundant when it does. Millions of seals and of walrus live on northern fish and crustacea and have to be hunted mainly in subarctic and arctic (or antarctic) waters by those who pursue them in ships for their hides, ivory and oil. Indeed, the chemist and marine biologist are both ready to explain that the conditions of rapid chemical change and decay are such in warm waters that an animal or plant that dies is soon resolved into its elements and removed from the domain of food; while if a similar organism dies in cold water its body floats around for a considerable time ready to be devoured by other organisms.** This in simple terms is the explanation of why more animal life can subsist in cold than in warm ocean water—there is more to eat.

But here the critic can object that the oceanographers themselves, such as Sir John Murray or Nansen, while pointing out the tremendous abundance of animal life at the outskirts of the polar ice, assert that it becomes rare when you penetrate far within the ice-covered area. On such a point men like Murray can reason only upon *a priori* grounds, inference and hearsay; but Nansen can appeal to the testimony of his own drift in the *Fram*, and he tells us that he found crustacea and in general all small animal life rare when you get far within the ice.* Without minimizing the great wealth of knowledge brought back to us by the *Fram* at the end of her first voyage, I would provisionally in my reasoning assume that Nansen's failure to find animal life in great abundance was due not to its actual absence so much as to its presence having escaped his observation.

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* The Ocean," by Sir John Murray, Home University Library, New York and London, pp. 162-164.

** See "Fishes of the High Seas," by J. T. Nichols, in The National Marine, July, 1920, pp. 26-34.

That animal life in the ocean is extraordinarily abundant on the edges of the ice-covered area I have said is well known. It is equally well known that there are great currents that sweep into the Arctic and under the ice to take the place of the water that flows south in the form of cold currents. It is asserted that fish do not take kindly to the ice covering over the sea at high latitudes. The polar ocean is generally several miles in depth, and what difference should it make to a fish though there be numerous pieces of ice floating on top? When the presence of ice on such lakes as Winnipeg, Bear or Baikal does not appear to interfere with the happiness of the fish that live in them, then why should we assume that it does in the ocean? You can scarcely think of scum or dust so thin on top of a basin of water as not to be proportionately thicker than five or ten or even fifteen feet of sea ice on top of fifteen thousand feet of ocean water.

But even if all the fishes were to turn tail and swim south when they came to the edge of the ice, there would still remain the tremendous quantity of plankton or floating life which without volition of its own is carried north under the ice with every movement of the upper two or three hundred fathoms of the sea surface (any life deeper than that would be unreachable by seals). Nansen's own theory of drifting across the polar basin, which was so triumphantly vindicated by the *Fram,* postulates that any object found at one edge of the icy area this year will have drifted across and will be found at the other edge two or three or five years from now. If the given object drifts across, evidently the water in which it floats has also been drifting across and in that water at the beginning of the voyage were living myriads of floating plants and animals.

Why is it logical to assume that these will all have died and disappeared before a particular cubic unit of water in question gets into even the center of the inaccessible area? Even were it to die and disappear when the center of the inaccessible area is reached, it would have by then lasted long enough to serve all our purposes. We were going to start from that edge of the ice from which the drift is assumed by Nansen and others to be northwestward or northerly; we should assuredly have with us as fellow travelers all these docile animals that allow the currents to carry them where they please.

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*See article by F. Nansen in Eleventh Edition of the Encyclopædia Britannica; title "Polar Regions."

It was thus I reasoned that the animals upon which seals live will be found everywhere under the ice of the polar sea. And if the feed is there, the seals will follow the feed. We can travel along with confidence, killing seals as we need them, using the lean and part of the fat for food and the rest of the fat for fuel. For a seal that weighs two hundred pounds will give something like eighty pounds of meat and bones, twenty or thirty pounds of waste and nearly a hundred pounds of blubber. When you have killed enough seals to furnish you with the lean meat needed for men and dogs and when the men and dogs have eaten all the seal's fat they care for, there will be left over blubber for fuel to be used extravagantly, with still a remainder to be thrown away.

Does it seem that even if the seals were there we might not be able to get them? I am glad to say that none of the members of our expedition raised that point very seriously. Both Storkerson and I had lived for many years with Eskimos. They remembered that we knew every trick there is of detecting and securing seals and, further, that these tricks are easily acquired. It is true, although puzzling, that it is possible to live in close contact with people who are doing certain things and still to keep the mental attitude that we ourselves undoubtedly could never learn to do them. The feeling is familiar not only to men who hire Indian guides to take them miraculously through the wilderness, but to those who own cars or hire taxis and yet feel that their driving and repair are things in which they could never become adept. But none of our men supposed Storkerson or me to belong, so far as seal hunting went, to the class of those who own cars and cannot drive them.

At this point it was common for my auditors to say something to the effect that, while this reasoning sounded all right in a warm room, they did not think they cared to risk their lives upon it. Rather than an argument ever so sound, they preferred the evidence of eye witnesses, such as Nansen and Peary, who had been there and come back with testimony of the absence of seals. It was unreasonable to assume that all polar travelers before our time had been fools and incapable of finding this royal road to exploration.

To these objections I could reply sincerely that I yielded to no one in my admiration for Peary and that he had been my friend and adviser for many years. But according to plans which he considered (and found) adequate to the task of reaching the Pole, Peary had started from Grant Land with food enough to take him to his destination and back again; there was no reason why he should stop to hunt for seals. Furthermore, Peary himself does not ever appear to have hunted seals by the Eskimo method and probably was not familiar with the technique of it and especially with the unobtrusive signs by which the expert hunter can detect the presence of seals. The reply to me was that Peary had Eskimos with him who were presumably expert seal hunters; to which it could be countered that, while Peary could speak to his Eskimos in the jargon which he used for intercourse with them and while they would always understand him and be able to reply in the same jargon, he never tried to learn their language, or, as he calls it, their "secret language." * At the end of a day's travel the Eskimos might very well have discussed with each other in the vernacular or "secret language" the seal signs they had noticed during the day and Peary would not have known what they were talking about. For it would not have occurred to him to ask, having concluded *a priori* that there were no seals; and it would not have occurred to them to speak, for they would not have supposed him to be interested. Peary's Eskimos, too, were usually in a hurry to get back home, and if they had supposed him interested and had told him about the presence of seals it might have delayed the journey and kept them away longer than they liked. Possibly the conditions out at sea were so different from those they were used to around Smith Sound that they themselves may have failed to notice the seal signs. On this point I cannot speak, for I have never visited Smith Sound, and no one who has has had enough command of the technique of seal hunting to write instructively about it. At any rate, no such observations have been published.

It is possible for a business man to buy a passage from New York to Liverpool and to cross the Newfoundland banks without ever seeing a codfish or any evidence to lead him to think that codfish are there. But a fisherman on the banks would have no doubt of the presence of codfish nor any trouble in getting them.

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* See "The North Pole," by Robert E. Peary, p. 50.

It seemed to me that in an analogous way even keen observers like Nansen and Peary, preoccupied with the carrying-out of plans having nothing to do with seals, might have traveled for months over an ocean full of them without ever suspecting their presence.

But our plans did have to do with seals very definitely. By the theory that governed them seals were there. We would therefore look for them, and if they were there we should know how to get them. The conclusion to me had an appearance of soundness. If it were to work out, we would have solved the problem of commissariat, hitherto the crucial difficulty in polar exploration.

But at the end of the most elaborate and logical argument the ordinary "hard-headed" listener would still demur on the changeless ground that all eye witnesses were on the other side. If the thing contended for were so, some one would have discovered it long ago; there must be a flaw in the reasoning somewhere. Most of the men said they declined to go on any such enterprise, and that public opinion would sustain them in their refusal.

Perhaps they were right about public opinion. Perhaps they were right in their own decision. Whether we think so or don't is a matter of temperament.

It was on the basis of this reasoning as I have stated it that some of my local judges came to the conclusion that my plan of an extended journey where men and dogs would live on seals or die without them amounted to insanity and justified them in their general lack of confidence in all my plans, at least in so far as they hinged in any way on this central idea. As a matter of fact, most of them did hinge on it.

I pointed out that when those plans had been laid before the National Geographic Society in Washington, the Museum of Natural History in New York, the Geographic Congress at Rome, and Sir Robert Borden and his Cabinet at Ottawa, the proposal to try "living by forage" had always been the central idea and it was exactly this that the Canadian Government had sent me North to try out.

The *Karluk* had carried a sumptuous outfit of the orthodox kind with which we could have outfitted parties for ice exploration by any of the well-known and often-tried methods. It had in fact been my intention to use substantially the Peary methods when within 500 or 600 miles of our base, and then to extend the length of the journeys both in mileage and time by continuing ahead and living by forage instead of turning back when the last of perhaps twenty sleds we had started with were empty. But the *Karluk* was gone and we had only two good sledges to start with; the system of relays of many support parties was out of the question. It was now a case of either letting the geographic program go or else trying out the method of "living off the country" while doing with that program what we could.

How thoroughly beyond the scope of our diminished equipment the Peary system of relays or support parties was, can most clearly be shown by a brief review of Peary's trip to the North Pole.

When Peary started north from Cape Thomas Hubbard he had before him a journey of just over 400 miles and back. According to his calculations, he needed for this 139 dogs, 24 men and 19 sledges. The sledges were loaded mainly with food and fuel for, on his theory that you have to carry with you everything you are going to use, clothing, camp gear and the like had to be cut to the minimum. For 24 men he carried only two rifles. On other journeys he had carried only one and had even sawed off half the barrel to make it lighter. I believe he carried only one pair of field glasses for the entire party. No matter what the latitude, it is always uncomfortable to sleep at night in the clothes you wear in the daytime, but the saving of weight was so essential that he permitted the carrying of no bedding and he and the men slept in their clothes.

As they traveled north the sledges rapidly became lighter. The 139 dogs ate a pound each per day, the 24 men ate two pounds each, and there was a certain amount of fuel consumed. Before many days several "standard loads" of 600 pounds each had been used up, leaving that many empty sledges. Peary would send these back with the poorest dogs and the men who were for one reason or another least suited to the work, giving them just enough food for a rapid journey ashore. A few days later a few more sledges would be empty and similarly sent back. No man ate an ounce more than he was entitled to, seldom was an extra ounce of fuel used to warm even the coldest camp; the men worked to the limit of their strength and the dogs beyond the limit, so that one by one they fell behind on the trail and either lay there frozen or were fed to the other dogs. By this system Peary finally found himself with three sledges loaded with provisions and with three or four of the men best adapted to traveling, within striking distance of the Pole. He made it and he got back safely. But he has said to me that had the Pole been a hundred miles farther away it probably could not have been reached with this method in a way to provide for a safe return ashore.

On this point I saw no reason to disagree with Peary. Four or five hundred miles away from the base and back seems to be about the limit of a journey that can be made with that system. But though the North Pole is only about 400 miles away from the nearest land upon which a base can be established, there are many other points within the polar regions that are much more remote from a base on any known land and these would be unattainable by the Peary system. It is in this connection that we have prepared the map of comparative inaccessibility of various points within the polar regions which is published in this volume.*

This consideration of the Peary system, which is admirable within its scope, shows clearly why we could not possibly have carried on by that method. To begin with, to be successful in the task entrusted to us by the Government we had to make journeys longer than either the one Peary made, or any he considered the system capable of. And then we had not the men nor the sledges, though we could doubtless have purchased the dogs. It was literally a choice between the absolute failure of our geographic program and the testing of the method of "living off the country."

As a last plea I used to point out to the men that I had announced the intention to live by forage on the sea ice not only in the official statements of the expedition but also in newspaper interviews, in speeches made to "Canadian Clubs" and other organizations just before leaving, and, in fact, in every public statement made by me on the point. They had known from the start, therefore, that I might call on them for just this work. Some of them replied they had never supposed this was anything but newspaper talk. It might perhaps be justifiable to use this argument to create public interest and secure funds for an expedition. But a man's life is the only one he has and he can not be expected to risk it lightly.

But I did get volunteers enough for the minimum number of assistants needed. To these loyal men, poets enough in their outlook on life to be willing to take new risks that new lands might be found, new seas charted and a new idea tried out, I owe gratitude for support at a critical time. And no less do I owe it to Storkerson, Andreasen and Castel whom I was able to engage from outside. Their consistent support when they were with me, their energy and discretion when they had to carry out tasks on their own, enabled us finally to do without the *Karluk* most of the geographic work that we had been expected to do with her help.

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*See ante, p. 8.

No courage nor hard work can replace years of technical training, nor can delicate scientific instruments be improvised with a jackknife. There was no replacing McKinlay, Malloch or Murray in the northern section any more than Beuchat could be replaced in the southern. But the lands were discovered, the seas were sounded and the field covered though most of the detailed scientific work has to remain for the future.

The men of the expedition who were willing to go with me as far as I might care to go myself were Bernard, McConnell (as I knew, though he was not now at Collinson Point) and Wilkins.

Those who were willing to go on the support party were James Crawford, Frits Johansen, Otto Nahmens and Charles Thomsen. There were also the four volunteers from the *Polar Bear,* but it had always been understood that their volunteering was to take effect only if I proved unable to get men otherwise. That storm had now blown over.

Of those members of the expedition who did not volunteer for the advance work, many were not expected by me to do so because they had too important work to do ashore either of a scientific nature or in connection with managing the ships or camp. Some were also physically disqualified. And I was able to get all the men I thought I should want. What I needed from the others was merely the coöperative spirit and the help of a few of them as a relay party to go a short distance from shore to help us through the worst belt of broken ice, perhaps fifty miles.

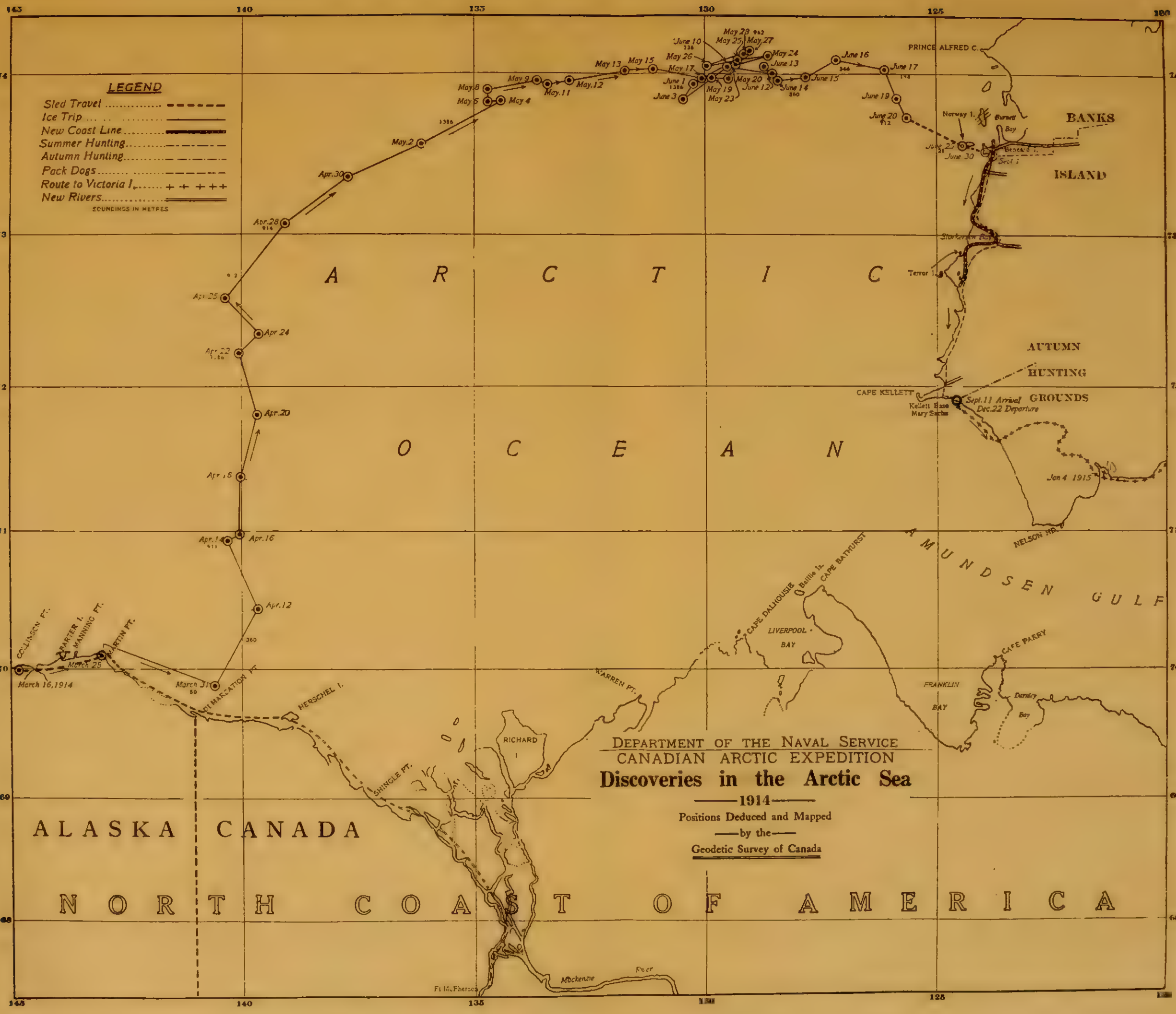
Of the men I have mentioned as willing to go with me on the ice, all were at Collinson Point or in the vicinity except McConnell. He had been sent shortly after Christmas from Collinson Point to Cape Halkett, a distance of about 150 miles, to fetch Jenness down to Barter Island for archæological work to be done in the spring. McConnell should have returned long ago and we were beginning to worry a little about him. While the journey was by no means an agreeable one to make during the absence of the sun, there was little chance for anything to have gone wrong. But I wanted McConnell to be of the company and we needed badly the good dogs he had with him and his sled, a better one for the use of our support party than the one we would have to take in its place.

It was on the *Belvedere* I got Aarnout Castel. I had first seen him as a sailor on the *Bowhead* under Captain John Cook in 1906 and had before now found reason to consider him an excellent man. Partly through the good offices of Captain Cottle, but mainly because Castel was made of the right stuff, he volunteered for the advance work.

I set much store by Ole Andreasen, a brother of Captain Matt Andreasen. I did not really know exactly the sort of man Ole was going to be, but he had at least the admirable quality of cheerfulness under all circumstances and an absolute inability to see how anybody could be lonesome anywhere, no matter how isolated or remote from various things that ordinary people enjoy. This I knew from my experience with him on my second expedition (spring, 1912). I suppose that those who philosophize on such things would say he had "resources within himself" which are lacking in most of us.

Captain Bernard, who was going in our support party, was an excellent dog driver and one of the best traveling companions I have ever had in spite of his fifty-six years. It was largely thanks to him that our sledges were in as good condition as they were, for among other accomplishments he was an excellent sled maker.

The last man to be mentioned of those I eventually selected for the start out on the ice was Frits Johansen, marine biologist. In a sense he was the most important because, in addition to his other work, he was expected to make whatever oceanographical or biological observations he could. At one time on the support journey he got so interested that, contrary to his feelings when he was on land, he wanted to continue with us to the limit of our journey. But both his own judgment and mine was that the expedition could not afford to have him do this, for he had a great deal of biological paraphernalia ashore which nobody but he understood and of which he alone could make full use—as he eventually did, for his scientific results were perhaps the most voluminous of the expedition.



Map Showing Operations of Expedition, December, 1913 to December, 1914.

# CHAPTER XIV

## THE ICE JOURNEY BEGINS IN MISFORTUNE AND DIFFICULTY

THE third day after I got home everything was ready for the journey to Martin Point and thence out on the ice. But now nature took a hand. One of the worst gales that any of us had ever seen blew up from the southwest. Not only was the wind terrific for two or three days, but the temperature was lower, considering the wind velocity, than I had previously seen it on the mainland of North America (37° below zero F. with a wind we estimated at 60 to 80 miles an hour), although I have since seen worse weather out on the Canadian islands. This wind delayed us for two or three days, at the end of which our caravan started. We arrived in two days.

On the way to Martin Point we saw to seaward black patches in the sky, the reflection in the clouds of open water not far offshore. From the information of Eskimos, whalers and our own people alike, we knew that for a month or two previous to this the ice to an unknown distance from land had been lying quiet and fairly level. It must have been unbroken for twenty or thirty miles out at least, for no water sky had been seen from shore even in the far distance since shortly after Christmas. If we only could have started two or three weeks earlier, as had been planned, or even a week earlier, we could have made rapid progress away from land for the first twenty or thirty miles. This is the most critical belt, for the obstructions to travel are usually greater the nearer you are to shore.

Now the prospects did not look good, for the blackness was reflected so high in the clouds that it was clear the open water was not more than four or five miles from the beach. What we had to hope for was a spell of cold and calm weather, giving young ice a chance to form over the open stretches out of which the wind had blown the old ice, drifting it to seaward. But that was just the sort of weather we were not having and did not soon get. The early part of the gale had been at a temperature of 37° F. below zero, which is extraordinary for a wind of over 80 miles an hour, as this was at its maximum. But as the gale proceeded the temperature had risen. Now that it was over the weather kept so warm that, although the season was still winter, the temperature was actually that of spring. At times it came almost up to the freezing point. This was pretty serious, for when the ice has some tendency to movement, as is usual after a gale, it is not likely to be set fast solidly enough for travel by a frost of less than ten or twenty degrees below zero.

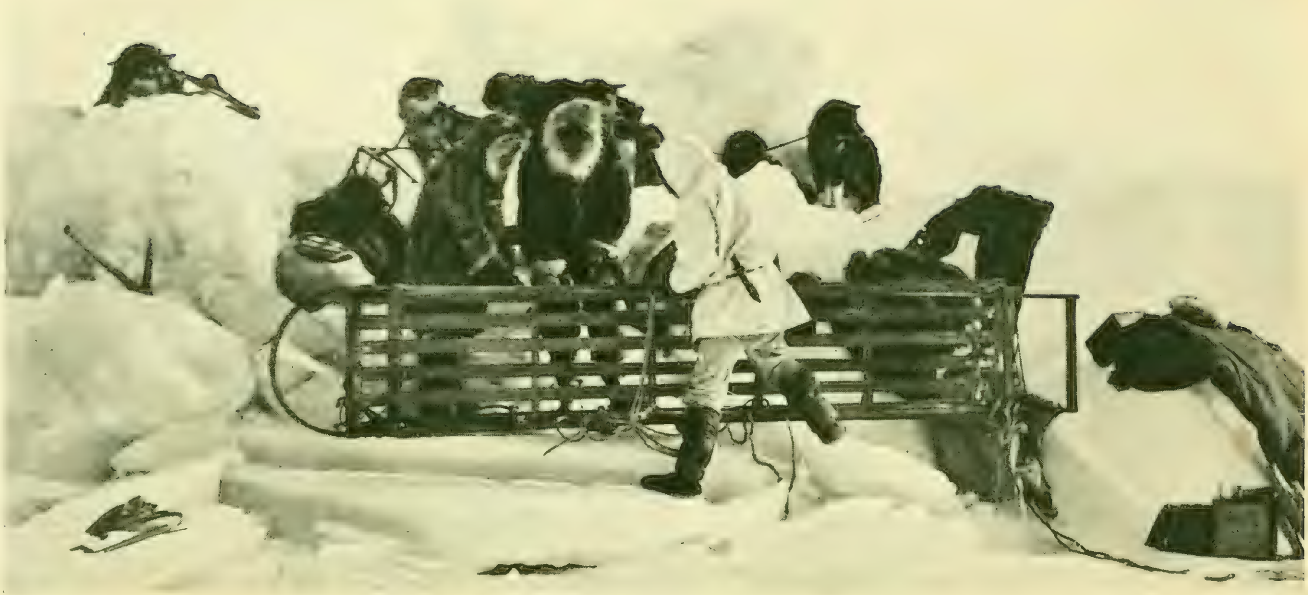
On Sunday, March 22, 1914, we made the start out on the ice northward from Martin Point. This was about three weeks or a month too late. The sun was getting higher every day and spring was approaching, when on the ice of the polar sea no man can work with safety or comfort. But with the failure of the *Karluk* behind us it was now or never. Neither the Government at Ottawa nor the men of our own party would have continued their support had we failed to accomplish something that spring of 1914.

Besides the men of our own party, we had at Martin Point visitors from the two whaling ships wintering in the vicinity, Heard, Mott and Silsbee of the *Polar Bear*; Baur, Hazo and McKinnon of the *Belvedere*. These were some of the men without whose assistance and encouragement we could not have been ready to start even then and probably could not have started at all. I remember distinctly the warmth of their farewells and good wishes, but my recollection of the weather seems less acute, or at least different from theirs. Neither my diary nor my memory tells anything of a terrific gale that was raging, yet Mr. Mott in a magazine article gave this account of our departure: "When Stefansson started the ice was soft and the weather bad, with a strong wind blowing. It was so bad that we felt we couldn't go home that day, although our camp was only ten miles away. It was an awful day. The wind was howling and the snow was swirling as they pulled out into the teeth of the blizzard, and before they had gone fifty yards they were out of sight. We fought our way back to our tents, thankful we weren't in their places. The next day I wrote in my diary that I never wanted to be an explorer, that they earned all the glory and all the honor that the world can give them. It is worse than being in the trenches."

This is the point of view of a man who was present when we started and who wrote of it later, after going home and serving the full American part of a war we were never even to hear of for more than a year. Unfortunately, as I believe, for Mr. Mott, the arctic blizzards which he encountered had always found him in the vicinity

The Sledge Trails Seaward from Martin Point.

Cooking Outdoors with Seal Fat.



Repairing a Broken Sled.

of his ship or some Eskimo house into which he could retreat, and where in a cozy interior his mind was free to endow the gales outside with the horrors that those of us fail to notice who fight them daily as an incident of our work. My weather entry for that day is, "Clear, snow drifting, wind N. E. 30°;" which being translated means that although the snow was whirling around us enough to explain the statement that we soon disappeared from sight, there was clear sky to be seen overhead.

My diary does go into some detail as to equipment. The first sled was driven by Captain Bernard with seven dogs and a load of 1,020 pounds; Wilkins came next with seven dogs and 789 pounds; then Castel with five dogs and 644 pounds; and Storkerson last with six dogs and 960 pounds. Andreasen and Johansen held themselves ready to assist any of the teams that might get stuck in a snowdrift or to right any overturned sled. It was my part to go ahead carefully picking a way between the masses of jagged, upturned ice that make the surface of the northern seas in winter not the level expanse those may imagine who have seen only lake ice, but something between a system of miniature mountain ranges and the interior of a granite quarry.

This first day everything went as well as could be expected. The gale of the 17th had broken up badly all the offshore ice beyond the six-mile limit, so that at the end of three hours we came to the meeting line of the land-fast ice and the moving pack. Seal hunters from the *Belvedere* and *Polar Bear* had assured us that for twenty or thirty miles offshore there had been since Christmas no movement of the ice before the 17th, but now it was an archipelago of large ice islands floating in a sea of mush and water and moving past us to the east at the rate of half a mile an hour.

We had some hope of heavy frost that night. Ten or fifteen hours of twenty or thirty degrees below zero would, had the wind ceased, have solidified everything into ice possible to travel over, although scarcely with safety, for the chief danger zone in polar exploration is the mush belt where the pack grinds itself into pieces against the edge of the land-fast ice. But the temperature in spite of calm did not go below zero, and although there was little motion in the ice outside of us, the next morning the conditions were by no means ideal. By pressure from seaward the ice cakes were heaped against each other and against the shore floe, and as the season was too late for awaiting more favorable opportunity, we struck off on this insecure ice. For about a mile and a half we went on, crossing from cake to cake where the corners touched and occasionally over narrow cracks filled with loose mush ice that bore up the dogs and sledges, but compelled the men to lean their weight on the handle-bars to prevent themselves from breaking through. Even at this, some of them broke through enough to wet their feet.

Then our progress was stopped not by adverse ice conditions but by the most serious and most nearly fatal accident I have ever seen in the North. Captain Bernard was still driving the leading sled just behind me when we passed over a little ice ridge not more than three feet high. From off this ridge on to the level ice beyond there was a sheer drop of between two and three feet, which is not a serious circumstance ordinarily, so that I did not even look around. But Captain Bernard unfortunately had his hands on the handle-bars and when the sled dropped failed to let go. By the weight of the sled he was pulled forward and fell on his forehead, striking the cross-piece between the handle-bars. There was a slight outcry, probably from some one else. When I looked around Captain Bernard was sitting on the level ice holding one hand to his forehead. A moment later he removed his hand, being about to stand up, when a flap of his scalp dropped down over his eyes, exposing the skull and hiding nearly all the face above the mouth. He had cut the scalp in an inverted curve from about an inch above the outer corner of the left eye to a little outside the outer corner of the right eye, the arch of the cut passing up over the entire forehead.

We hastily pitched a tent, took some stitches in the wound, and carried the Captain ashore in an empty sled. Two men were at the handle-bars to keep it from upsetting and two were at the front end to ease it over the rough ice. In spite of this the Captain received a great deal of jolting which further increased the bleeding, so that by the time we got him ashore his underwear was soaked with blood and his boots nearly full of it, while his strength was so diminished that he had to be helped into the house. The marvel was that he did not once lose consciousness.

Next morning it appeared both that the Captain's wound would probably not prove serious and that we could not in any event do him any good by staying, so we started off again. The other men had meantime returned to the edge of the land-fast ice where they waited for us. It was true misfortune that Captain Bernard could not go on with the journey, for he was a good man from all points of view and his enthusiasm and cheerfulness were especially valuable. His place was taken by Crawford, and McConnell was taken on as an extra man. He had caught up to us on the ice just before the accident to Captain Bernard. He had arrived at Collinson Point several days after we left there and, although told he could probably not catch up, he pluckily started after us, tired as he was from the long trip from Barrow. Unfortunately he had no means of knowing how badly we needed the sled he had been using, so he left it at Collinson Point for a lighter one with which he pushed on to Crawford's camp at the Ulahula mouth. Here Crawford had joined him to help him on till he overtook us. The morning of March 23 when we had, as we thought, left all communication with land behind, he arrived at our camp while we were still asleep to give us the Barrow mail and beg for a chance to go along. Later it was he who volunteered to take the 14 stitches that were necessary to close the Captain's wound. And a good job he made of it.

Once more we were ready and fortune was against us. In an ordinary arctic winter the last two weeks of March should have an average temperature of twenty or thirty degrees below zero, but from the 20th to the 30th of that March we had weather that seldom went down to zero and occasionally almost up to the thawing point. The ice outside the six-mile wide land floe, which had been broken up by the gale of the 17th, was now no longer subject to strong currents and was moving very sluggishly. It could have been set fast and firm by a single night of good frost. But this good frost refused to come.

Just what moving sea ice is like may interest the general reader. A certain amount of ice in winter is frozen fast to the beach, and in some cases for a few hundred yards and in other cases several miles is grounded solidly upon a shallow bottom. But as you proceed away from land you come to what we call the "floe," or place where the edge of the shelf frozen fast to the land meets the moving pack. When the pack is in rapid motion, as after a severe gale, its speed on the north coast of Alaska may be as much as two miles an hour, rarely a little more. The ice masses are of all sizes and all thicknesses. When a heavy floe moves along the edge of the land ice in such a way as to rub against it, we say that the pack is "grinding." Sometimes this is a terrific phenomenon. Instead of a description of my own, I shall borrow one from the diary of McConnell who now saw it for the first time.

"In the afternoon the Chief and his right-hand man, Mr. Storkerson, went over to the lead, and when he returned he told Wilkins and me that we could see a sight worth seeing by walking over there, but not to go too near the edge. It was a magnificent and awe-inspiring sight that met our eyes. The whole field on the other side was in motion to the eastward and often would come in contact with the floe on which we stood. Then the rending and tearing and crushing of the floes was almost deafening, and pieces of ice larger than an ordinary house would be tumbled about like corks in the water. The opposite floe would come tearing along at a speed of over a mile an hour, and when it encountered the land-fast ice something was sure to happen. Ridges thirty feet high and more would be formed one moment, and tumble back into the sea the next as the pressure from the moving field was abated. Wilkins took my photograph with one of these ridges for a background. Then we returned to the tent with the first inkling, on my part at least, of the resistless power of the arctic ice in motion because of either current or wind. It was a weird and impressive sight. I was a little sobered by it."

The grinding of the floes against the land-fast ice and against each other makes what we call the "mush ice," which may be a soft slush or may consist of fragments the size of your fist, the size of a kitchen range or of a house. As the floes spin about open patches of water of all shapes and sizes will form, to close again when the floes continue their revolution. After such a heavy gale as we had just had, pieces more than a dozen acres in area are rare in the vicinity of land ice, but the farther from land the larger the pieces, and fifty miles from shore the hardest gale will leave most of the ice still in the form of big, coherent masses, miles in diameter. Naturally, when the edges of such floes meet, a certain amount of mush ice is formed, no matter what the distance from shore.

It is evident that no camp on sea ice is ever entirely safe. Even fifty miles from shore a crack may open in the middle of the floor of your snowhouse or tent, though the chances of this decrease with the distance from land. The original crack may be several hundred yards from camp, yet when the two floes begin to grind past each other the edges of both tend to break up. The greatest danger comes when the ice mass that strikes yours is traveling so that the lines of motion of the adjacent floe and of your floe intersect at some such small angle as ten to thirty degrees. Huge pieces are then torn rapidly off the edges of both floes if they are of similar thickness, or off the edge of the weaker. If you happen to be camped on the weaker one it behooves you to move quickly. Pieces of your floe the size of a city lot will rise on edge and tumble towards you, and the ice around camp and under will begin to groan and buckle and bend. Where it bends little rivers of sea water come rushing in, and where it buckles small pressure-ridges form.

Since the relative speed of the floes can never differ by much more than two miles, the rate at which you have to flee is never more than two miles an hour and commonly less. Still, if the breaking up begins when you are sleeping, the awakening is abrupt and something has to be done in a hurry.

We have learned to make our winter camps so comfortable that when on land we always undress at night, and on the sea ice we do so whenever the camp site seems to be comparatively safe. One important aid to safety is that the tremors of breaking ice and the groaning of it are transmitted for miles through ice, where they might not be audible at all through the air. A snowhouse is so sound-proof that the barking and snarling of fighting dogs outside can seldom be heard, but their spurning of the snow and tumbling about is plainly audible, especially if you are lying in bed with your ear to the ice. This is how we hear dog-fights, which have to be promptly stopped. And this is how we hear the approach of a bear, for the crunching of snow under his heavy tread can be heard through the ice for even a hundred yards in spite of a gale whose whistle and hum would make it difficult for men to converse standing close to each other out-of-doors. In case of a dog-fight or the approach of a bear we commonly enough run out naked, no matter what the temperature; for we find it true in fact as in theory that a chilling of the entire body simultaneously produces no ill effects, and the fight can be stopped or the bear killed in from thirty seconds to two minutes.

But with the breaking up of ice it is different. When we feel the quivers of the approaching pressure, or hear the detonations of the breaking or the high-pitched squealing as one heavy flat piece slides over another, one of us may run outside to spy out the situation, but unless his report is most reassuring we dress as quickly as firemen upon the ringing of an alarm. Clothes have no buttons and shoes no laces, and it isn't long till we are ready to move. The sleds are kept loaded except for bedding and cooking gear, and these can be rapidly taken from camp and added. Harnessing the dogs is also a quick process; each man can harness about two dogs per minute.

In our five years of work on moving ice it has never actually happened that we had to flee precipitately except on one occasion, when by good fortune our sleds were already loaded. But it has often happened during the day's march that a situation quite as dangerous, though not so startling, has developed. This is when we are traveling across ice that has been grinding and is still under pressure, crossing from one cake to another by the corners where they touch. If we find ourselves upon a weak cake a few acres in area that is surrounded on all sides by stronger cakes, its edges crumple up if the pressure is steady, and a ring of ice ridges begins to form around. As the pressure continues the ridges get higher and the area of our cake gets smaller. It is a rather uncomfortable thing to have these ridges marching towards you slowly from all sides, with a noise that is anything between a slight rumble and a deafening roar, and the ice shivering where you stand. The worst thing is that the shivering and the crashing will paralyze the dogs with fear and make them worse than useless. This is where we need several men for each sled. The thing to do is to select some rather low place in one of the advancing ridges where the motion is slower and there is a solid floe beyond. To find such a place is difficult, more difficult because the weight of the forming ridge depresses the edge of your floe and causes a moat of sea water to separate it from you.

At twenty or thirty degrees below zero the dogs are even more afraid of putting their feet in the water than of putting them upon moving pieces of ice. If there are four or five men with two sledges, as has been the case in some of our trips, we take the teams one at a time and usually have little trouble in dragging dogs and sleds over the ridge, for the tumbling motion of the cakes is slow enough to cause a sure-footed man no great trouble. When there are only three of us there is the advantage of only one sled, with no return trips necessary. But there is the disadvantage that with one man at the handle-bars to keep it from upsetting, the other two men are scarcely stronger than the six dogs, and we should be unable to move the sled at all were it not that the scared dogs seldom balk in unison, and two or three will be pulling ahead when the others are pulling back. In an emergency of this sort the style of harnessing is important, and it is especially here that I favor the tandem system where each dog is kept in his place between the two traces. In harness such as is used in Nome the dogs have too much freedom and are able to turn completely around and face the sled. The fan system used in Greenland and which we have used in Victoria Island is even worse, for there each dog has complete freedom and can pull in any direction he likes.

Breaking ice would mean a greatly complicated danger during darkness. For this reason we frequently camp an hour or two earlier when we come upon an exceptionally firm ice cake that promises a night without a break-up, or travel three or four hours longer when we fail to discover one firm enough for a campsite. It is for this reason too that we do not care to leave land in the beginning of our ice journey until after the first part of February in any year, for before that the nights are so long that the probability of getting into ice pressure during darkness is very high. This danger is not so great if your base on land is in some region of sluggish ice movement, such as northern Prince Patrick Island or Ellef Ringnes Island or, to judge from his account, Peary's starting point, Cape Columbia. But any one beginning a journey from a region of violent ice movement, such as the north coast of Alaska where we worked, or the northeastern coast of Siberia where Baron Wrangel worked nearly a century earlier, is taking serious chances if he starts out before the full moon of February.

Bright moonlight gives most help after sunlight in ice travel, but cloudy nights hold danger, and for a reason special to arctic latitudes. Sea ice is seldom in reality smooth, but when sun or moon is behind clouds it will appear smooth through absence of shadow. In the more commonplace latitudes the hole out of which you have just pried a stone looks distinctly different from the stone lying beside it, no matter what the conditions of light, so long as you can see at all. That is because the stone is gray or brown or some other shade which differs from the earth walls of the hole. But in the frozen sea a boulder of ice and a hole beside it are just about the same shade of white or blue, and you cannot see either unless in the relief produced by shadows. Now either sun or moon shining in a clear sky will cast sharp shadows; but neither will do so when obscured by clouds, though either may give diffused light enough to reveal a man or stone at half a mile or a mountain at twenty miles. On the rough sea ice you may on an unshadowed day, without any warning from the keenest eyes, fall over a chunk of ice that is knee high or walk against a cake on edge that rises like the wall of a house. Or you may step into a crack that just admits your foot or into a hole big enough to be your grave. It is the strain on the eyes on such days of diffused light, the attempt to detect almost or quite undetectible hindrances, that makes us snowblind in cloudy weather more easily than on the most shimmeringly clear day. And bad as the cloudy day is the cloudy night is worse.

In taking the chance of starting on a polar journey late in January or early in February, the encouraging factor is that your great danger zone is a narrow one in the vicinity of land, and if you have a period of a week or so of calm and intensely frosty weather it may be temporarily quiescent, so that by a sort of dash you may be able to get forty or fifty miles offshore before the first gale strikes, beyond which distance we consider travel to be reasonably safe, no matter how little the daylight.

In our present case there would have been no wisdom in leaving the land-fast ice for the mush beyond. For ten days the frost had amounted to so little that the mush remained congealed. Light snow was also falling now and then, blanketing the weak places, not only preventing freezing but disguising the danger spots. It was naturally tedious to remain encamped on the edge of the shore floe only six miles from the land, especially with spring almost upon us and the chances of success diminishing day by day; but there was no other sensible thing to do. In the water at the floe's edge seals were numerous, and partly to have something to do and partly because we knew that our people ashore were a little short of meat for dog feed, we killed a number with a view of taking them ashore.

Now came a day when one of our kerosene tanks sprung a leak. We had two, each holding about six gallons, so that the loss of the contents of one was more than we could afford. I had intended at first that Wilkins should retain his motion picture camera forty or fifty miles offshore, thinking he might get some interesting pictures of moving ice and possibly of polar bears, but I now concluded that time would be so precious if we ever got away from the land floe that we could not afford either to stop for pictures or to carry the camera itself. So one day about noon I asked Wilkins and Castel to make a quick trip ashore, taking back the camera and the leaking tank as well as three or four seals, and returning with a sound tank full of oil. We had already been over this trail twice, first in coming out, then in taking the injured captain ashore, and the round trip would under ordinary circumstances have been made in about four hours.

When Wilkins' party left us, the shore could be seen through a slight haze and there was a gentle breeze from the southwest. Two hours later, when they should have been nearly ashore, there were heavy snowflakes falling and the rising wind had in it the promise of a gale. It seems that the gale began with them a little sooner than it did with us, for I learned later that by the time they got ashore it was blowing so hard that they had great trouble in getting the dogs to face the wind going up the hundred yards or so to the house, and after unhitching them, Wilkins has told me he himself had to crawl the distance on his hands and knees. Six hours from the time Wilkins and Castel left us we were in one of the worst of arctic gales. I have heard that the anemometer at Collinson Point

The Camp on the Ice Before the Gale.

WILKINS ON THE SHORE ICE.
Searching with fieldglasses the offshore ice on which he knew we were adrift.

fifty miles away registered 86 miles per hour, which may have been lower than the wind was, because these instruments tend to clog through thickening of their lubricating oil at low temperatures. The mild spell of the last few days had been too warm for snowhouses, and we were living in tents which, although good as tents go, were very unsatisfactory in such weather.

Although the ice we were on had been frozen to the beach all winter and in ordinary weather would have remained so till spring, we realized that a piece of it might break off and carry us with it out to sea. Andreasen, Crawford, Storkerson and I took turns standing watch outdoors, but this was really only a matter of form, for the blizzard was so thick that even while there was daylight one's eyes could be opened only momentarily, and the howl of the gale and the flapping of the tent made it impossible to hear the noise of groaning ice which we could have heard easily inside a snowhouse.

Many gales in the North last for three days, but this one had abated by the following morning, and at noon it was practically over. At first it did not seem as if anything particular had happened. Looking towards shore we could not see the mountains, but this was not surprising, for a haze commonly hangs over them for some time after a storm. To find out the situation I walked towards shore along the sled trail which should have wound in and out among grounded pressure-ridges for six miles towards the beach. But it did so no longer, for in less than half a mile I came to an expanse of open water several miles wide. Clearly the "tide" had risen during the gale, as it always does with violent sou'westers in this region. The field of ice which was ours had first been lifted off the bottom and then been broken off from the land floe, and we were afloat on it and being carried we did not for the present know where.

When I got back to camp with this news the air had cleared towards the land and we could see the mountains. The Endicott range to the south had been familiar to Storkerson and me for six years. We knew every peak. There was no doubting the evidence of our eyes, although it was a little startling to realize that the mountains abreast of us were those which had been forty miles to the east at noon the previous day when our two companions started for shore. From the very slight elevation of the peaks above the horizon we judged that instead of being six miles we were now twenty miles from the beach.

This was the second misfortune of a trip which as yet had hardly begun. The separation from us of Wilkins and Castel was in its effect more serious than the injury to Bernard. They were both excellent men, and Castel had been intended as the third man with Storkerson and me to make the advance ice trip. But we still had good men, so that the most serious blow was that the two had taken with them some of the best dogs, one of our two good sleds, and some tools and other special equipment that were in a bag permanently attached to the sled. The lack of these tools was for months afterwards an inconvenience which amounted to a serious handicap, while the loss of the sled compelled an immediate readjustment of plans. Of the four sleds we had when we left shore, two were very good and two almost worthless. These worthless sleds were to have been sent back about fifty miles from shore. Now we had only one good sled left.

# CHAPTER XV

## THE FIRST FIFTY MILES

BEFORE Wilkins went ashore his sled had of course been unloaded and the contents dumped on the ice. With one sled less, it was impossible to take along the same amount of stuff. The first task was to go through our possessions and discard what could most easily be discarded. We threw away some food and some spare clothing, and planted a flag on a high ice hummock, thinking this cake might drift inshore and be discovered by some Eskimo seal hunters or even by Wilkins and Castel. We knew that they would make some attempt to rejoin us, but felt that it was sure to be futile, for not only was there an expanse of impassable water between us and land, but there was no means by which they could tell how far east or to seaward we had drifted.

The second day after the gale we were able to commence traveling. The ice was under no pressure now, for the storm had blown it offshore and had drifted our island against the edge of the pack where it had stuck fast. The temperature, to our great distress, continued warm—never below zero, Fahrenheit. Still, as there was no pressure, the mush solidified enough in two nights to permit crossing in several places, although we were able to make only three miles the first traveling day. In some cases where the cracks between floes were no more than three to five yards wide, we used to bridge them by chopping ice for an hour or two with our pickaxes and throwing the fragments into the water until their combined buoyancy was enough to support the sled during the crossing. And the farther from shore we got, the fewer the cracks we had to cross.

A lead of open water appeared in front of us on April 4th. We could have crossed it by using the sled boat, but because in half a dozen such crossings the mush ice would have chafed holes in the canvas we did not do so. Furthermore, the pack was in motion and we expected the lead to close at any time, giving an easy crossing. So we did no traveling that day.

To encourage the men, and to demonstrate to them how easy it was to make a living at sea, I shot a number of seals and so did

Storkerson and some of the others. A few animals sank but we recovered six. When there seemed no use in killing more, I oiled the barrel of my rifle, as I always do when the temperature is not low, put it in its case and strapped the case on a sled. Meantime the men had made a bonfire of blubber and cooked some fresh seal meat. While we were feasting there was a sudden commotion among the dogs, which were still hitched to the sleds, for we expected to cross the lead at any moment. The sled with my rifle strapped on it was about six feet from the water, the other sleds only a little farther away, while the fire over which we were cooking was about twenty yards.

The cause of the barking was a polar bear, the first one that some of the men had seen. By the time he arrived the lead had closed to a width of not more than five yards and on the very brink of it was the bear, pacing up and down, trying to make up his mind to plunge in, like a bather reluctant to take a dive into cold water. I don't know what it really was made him hesitate. It can hardly have been the chill of the water, though he gave distinctly that impression. But even while I theorized about his motives and behavior, there came to mind the need for instant action, for some of the excited dogs might jump into the water to get at him, dragging a sled after them. Were the bear to cross the lead to our side the dogs, all tangled in their harness, would doubtless attack him. He would probably run away, but there was no certainty of it. Clearly he bore no hostility towards them nor had he any fear of their barking, or of the shouting of the six men who ran back and forth telling each other what to do.

According to his own account McConnell must have been one of the coolest of us, for he said afterwards that he immediately ran for his camera, asking us to wait until he got a picture. To get at my rifle I had to run around to the side of the sled nearest the lead, and while I was unstrapping the case my back was towards the bear about five yards from me. Storkerson's rifle was on the sled next to mine, and while he was getting it I noticed that I was in direct line between him and the bear. He had his rifle first, for it had not been lashed to the sled, and seeing that he was likely to fire I requested him to be careful to get the bear and not me. There was doubtless no likelihood of the mistake, but I thought a word of caution wouldn't hurt. When it came the explosion was so close to my ear as to leave me partly deaf for some time. The bullet struck the bear, of course, and probably surprised him as much as it hurt. He was leaning over the water just getting ready to dive and was startled into falling on his back in the lead, splashing water over me as he fell. The water was perfectly clear and looking around I saw him going down like a sounding lead, with his feet at first uppermost, though he soon straightened out, rose to the surface and scrambled up on the far side. As he was struggling out, Storkerson gave him a second shot and a moment later as he was running away a third; but the rifle was only a .30-30 and, although he was bleeding profusely, the bear was making off with considerable speed. For the further encouragement of the party, to prove that no bear could come as close to us as this and get away, I thought I had better try the Mannlicher. This shot rolled him over and I took the story to be ended. After I had turned away to put the rifle back in the case he got unsteadily to his feet and disappeared behind an ice cake.

The lead had been gradually closing, and Crawford, with a rifle and McConnell with a camera, were able to follow and find him about two hundred yards away, trying to cross a second lead. They fired several times, but when I got over he had crawled out on the ice, so that one more shot was necessary. It is always so when a group becomes excited—there is a hullabaloo and a fusillade of wasteful shooting. One bullet near the heart does a great deal more damage than a dozen badly placed, as many of these were, for some were in the paws, some in the neck and some in other fleshy parts. An exciting bear hunt may be interesting to read about but it is a poor hunt. One properly located Mannlicher bullet is all that should be necessary.

On shore polar bears are ordinarily timid animals, afraid of men, and afraid of dogs and wolves. But the behavior of this visitor was typical of bears far from shore. There they have no enemy to fear. Besides their own kind they are familiar on the ice-pack with only three living things—the seals, on which they live, the white foxes which they unintentionally provide with food but which never come near enough to be caught themselves, and the gulls which cry loudly and flutter about them at their meals. Zoölogists know, but it is not commonly realized by the laity, that the white fox is almost as much of a sea animal as the polar bear, for probably 90 per cent. of white foxes spend their winters on the ice. They are not able at sea to provide their own living, so several will be found following a bear wherever he goes. When the bear kills a seal he eats all he wants, usually from a quarter to half of the carcass. In many cases he touches none of the meat, but eats merely a portion of the blubber and the skin that goes with it.

After this satiating meal he probably feels as if he will never care to eat again and goes away to sleep under a neighboring hummock leaving for the foxes what is left. It is not likely that he will come back, but if he did, the foxes would hop and the gulls flutter away. From long experience he gets the impression that these creatures are not the least bit dangerous, but too elusive to be caught.

Without doubt the bear is able to tell the difference between a living seal and the meat of a dead one when he sniffs them in the air. There is always seal meat in our baggage and the smell is always about our camp. When a bear passes to leeward he must perceive the many camp odors, but the only one which interests him is that of the seal meat. Knowing no fear, he comes straight into camp, walking leisurely because he does not expect the dead seals which he smells to escape him; neither has he in mind any hostility or disposition to attack, for, through long experience with foxes and gulls, he expects any living thing he meets to make way for him. But if on coming within a hundred or two hundred yards of camp he happens to see a sleeping dog, and especially if the dog were to move slightly, as is common enough, the bear apparently thinks, "Well, that is a live seal, after all!" He then instantly makes himself unbelievably flat on the ice, and with neck and snout touching the snow advances almost toboggan-fashion toward the dogs, stopping dead if one of them moves, and advancing again when they become quiet. If there is any unevenness in the ice, as there nearly always is in the vicinity of our camps—we choose such camping places—he will take cover behind a hummock and advance in its shelter.

Our dogs are always tied, for in the dead of night a good dog may be killed or incapacitated in their fights with one another in less time than it takes a sleepy man to wake up and interfere. But we know the danger from approaching polar bears and endeavor to scatter the dogs in such a way that while a bear is approaching one dog in an exposed situation, another will get the animal's wind. Usually, too, we tie the dogs to windward of the camp, so that the bear shall have to pass us before he comes to them. When one dog sees or smells the bear he commences barking, and in a second every other dog is barking. At once the bear loses interest. He apparently thinks, "After all, this is not a seal, but a fox or a gull." His mind reverts to the seal meat he has been smelling, he gets up from his flat position and resumes his leisurely walk toward the camp. By that time, even though we may have been asleep, one of us will be out with a rifle, and a properly placed bullet ends the story.

When the bear comes as this one did in broad daylight, with the dogs awake and the men moving about, he apparently takes the dogs and us for a variety of gull, noisier perhaps than any he has heard, but no more dangerous. In a party used to bears the men stand with guns ready, while the one who is to do the killing sits quietly and waits until in his natural zigzag approach the bear exposes one side or the other so as to give a chance for the shot near the heart.

When we resumed our journey April 5th we left behind not only the bear carcass but most of the killed seals, partly because we could not haul them and partly because the time for the return of the support party was approaching and we thought they might be able to pick up the meat on their way ashore—emphasis is on the "might," because we were still so near shore that the ice floes had considerable difference of motion and were, besides, spinning on their axes. The return party did in due course try to follow the trail back towards shore, but proved unable to do so for more than a few miles and never saw this meat cache again nor the floe upon which it had been made. Just as had been the case with Baron Wrangel a century earlier in a similar region north of Siberia, they came across their old trails occasionally on the way ashore, but found them leading east or west or south as commonly as north, because of the floes having spun around during the interval.

We had reached next day what is known as the edge of the Continental Shelf. Up to this point the ocean depth had been increasing a little more than a fathom to the mile as we went farther from land, but here in a mile or two it increased to a hundred and fifty fathoms. The soundings had been taken by Mr. Johansen who, as marine biologist, also made what investigations he could of the sea temperatures at various depths, and of the minute animal and plant life of the water. We had found seals in 180 fathoms, killed them and hauled them safely up on the ice. This encouraged the whole party.

We still had more food with us than could possibly be hauled on the good sled intended for the advance journey. The other two sleds were so frail and kept breaking so frequently that the delays in repairing them more than cancelled any advantage of their additional transporting power. I therefore made up my mind to send the support party back at this point. By them I sent instructions to Dr. Anderson, the second in command of the expedition. These instructions are so important for the understanding of future events that a summary of them must be given.

Before leaving Collinson Point I had, to guard against the possibility of our not returning to shore before the ice broke up, left with Dr. Anderson certain instructions to cover that eventuality. I had also discussed with him, with Storkerson, and with others, my plan to proceed to Banks or Prince Patrick Island in case the drift of the ice made it necessary, or in case we found we could not get satisfactory results on the basis of a return by sled to Alaska. There was also the possibility of finding new land—remote, it is true, especially because of our late start. If land were found, I had expressed my intention to spend a year there. Or, I had said, we might go to Prince Patrick or Banks Island, partly because of the data to be secured on the way and partly to explore those islands during the summertime and to kill deer and dry the meat and skins for use as provisions and clothing the coming winter.

This second letter to Dr. Anderson emphasized the increasing possibility that we might go to Banks Island instead of returning to Alaska and instructed him more particularly than before as to certain things. The main point of both previous and present instructions was that in case of the non-return to Alaska of my party in the spring of 1914, he was to assume that we had landed at the northwest corner of Banks Island or the southwest corner of Prince Patrick Island. He would then find himself in command of the vessels in Alaska, of which he was to make the following disposition.

With the *Alaska* and as much cargo as she could carry and with certain members of the expedition, he was to proceed to the mainland shore of Dolphin and Union Straits. In that vicinity he was to select a winter base for the southern section of the expedition to occupy the coming year and possibly a second year following. With the *Alaska* were to go two oil-burning launches, which I had purchased especially for use in surveying river deltas and among the hundreds of small islands of Coronation Gulf.

The *Mary Sachs*, under Captain Bernard, was to take a cargo of goods into the same region, landing them there at the winter quarters of the *Alaska* or at some neighboring point preferred by Dr. Anderson. The *Mary Sachs* was then to return to Herschel Island and if the season still allowed, which was probable, take a second cargo from there to Cape Kellett at the southwest corner of Banks Island; or possibly, if the conditions seemed favorable, up the west coast of Banks Island to Norway Island, but not farther. In other words, the *Sachs* was to establish, presumably at Cape Kellett but possibly farther north, a permanent base of supplies to which any party might retreat in case of shipwreck or other misfortune farther north, or to which they might return when their work farther north had been completed.

But the most important item was that the *North Star,* under command of Wilkins, was to come as early in the season as she could to Banks Island and was to proceed northward along the coast with the expectation of possibly meeting us at Norway Island. In case she failed to find us or records left by us at Norway Island, she was to proceed, if she could, across McClure Strait to Prince Patrick Island, on the presumption that we would be waiting her there.

The *North Star* was a vessel especially suited to such plans, first of all because she had a single propeller. The twin propellers of the *Sachs* rendered her the least suitable of our three ships for ice navigation, good as she was in open water, for being located at the sides instead of amidships, these propellers stuck out at such angles that they were very likely to be broken off by the ice. This was the reason I did not expect the *Sachs* to go north beyond Kellett unless she found the ice conditions especially favorable. But the little *Star,* under her former owner, Captain Matt Andreasen, had shown herself the most competent craft that had ever come to this part of the Arctic for a certain kind of ice navigation. In the spring, when the rivers open and the thaw water begins to flow in little and big streams off all parts of the coast, the sea ice is melted by this comparatively warm land water, and an open lane is formed along the beach, while the heavier grounded ice is still continuous along the coast a few hundred yards farther to sea, and the pack is still heavy in the offing. With her fifty-two feet length and draft of four feet two inches loaded, the *Star* was able to make good progress along this lane when a clumsier boat of deeper draft could have made none at all.

My hope was that in this way the *Star* would be able to wriggle up along the Banks Island coast and get as far north as Norway Island early. Of course she could not carry much of a cargo (perhaps twenty tons, though Captain Andreasen said he had once carried twenty-seven), but with our plan of exploration this disadvantage did not weigh much against her superiority as an ice boat. She could bring four or five men and a dog team or two and ammunition, with kerosene for our primus stoves and a few things of that sort which are convenient to have even under a system of living on the country. These she would probably be able to carry much farther north than either the *Alaska* or the *Sachs;* and in any system of polar exploration a base far north is of paramount importance, although not quite as important to us as to those explorers who believe in freighting with them on sledge journeys their food and fuel.

I had bought the *Star* from Captain Andreasen only a short while before leaving the Alaska coast, and had planned all along to put her under the command of Wilkins, of whom I had already formed almost as high an opinion as his later service to the expedition justified. Although the Arctic is a place of uncertainties where schedules can seldom be adhered to, I had thus high hopes of meeting Wilkins and the *Star* in August at northern Banks or southern Prince Patrick Island.

Carrying these instructions to our men ashore the support party, Crawford, Johansen, and McConnell, left us at 70° 13′ N. latitude and 140° 30′ W. longitude, on the afternoon of April 7th. They had with them for a journey landward of fifty miles full rations for thirty-one days for the men and about twenty-five days for the dogs. We provided so much more than they needed because we had no means of carrying the supplies ourselves, and because we were unable to give them a rifle for sealing. With Wilkins' and Castel's rifles gone and also the ammunition that had been in the bag attached to their sled, the advance party needed both of the remaining two, for not only was the journey across the ice to the northwest corner of Banks Island far too long to make on supplies we could haul, but there was hunting to be done in Banks or Prince Patrick Island to lay up winter food for the dogs and crew of the *Star*. It is also always possible that one rifle may break, and one other offers by no means a large margin of safety when your hunting means your subsistence. With more mature experience, I would now never make a long trip with less than one rifle for each man. We have on some trips carried an extra rifle carefully packed away in a heavy case to be protected against accidents and reserved for an emergency.

I have learned from McConnell's diary, a copy of which he kindly gave me at the end of the expedition, that the party on their way ashore had a good deal of trouble with open water, and with high pressure-ridges where it was necessary to build a road with pickaxes and where in one case they were able to make good only a few hundred yards in a whole day of struggle. On one occasion being without a rifle they had something of a fright from three polar bears which approached their camp but consented to be scared away. After nine marches they reached shore on April 16th, where they fell in with Constable Parsons of the Royal Northwest Mounted Police, on his way to Herschel Island from a visit to the *Belvedere*. He told them that all the people along the coast, whalers and trappers and Eskimos alike, had given our party up for dead after the gale which carried us off from the shore ice.

Since that time we have traveled over the ice north of Alaska so long and so safely that it now seems curious even to these same Eskimos and whalers, as I know from conversation with them, that they could in 1914 have had such exaggerated notions of the dangers of ice travel. I remember especially one conversation in 1914, just before we left the Alaska coast, with Captain Mogg, a whaler of more than twenty years' experience, which illustrates the then common point of view. The captain told me that one day just about Christmas he had gone to the top of Herschel Island, which is about five hundred feet high, and had looked to the north without seeing any sign of open water or of anything except firm and stationary sea ice. The next day when the weather had cleared after a brief gale he had gone to the top of the island and had seen a belt of ice about a mile wide still clinging to the shore and beyond that open ocean, the pack having "gone abroad" before the gale. After a dramatic recital Captain Mogg turned to me and said, "Supposing, with your scientific notions, you had been off on that ice the day before when the gale struck—where in hell would you have been then?" It was obvious that Captain Mogg supposed I would have been at the sea bottom. It did not occur to him that a cake of ice may be a very seaworthy craft, and that when you are floating away on a large one you may have no more evidence that you are moving than do the people who sleep peacefully at night on shore while the earth is spinning on its axis.

# CHAPTER XVI

## WE ENTER UPON THE UNKNOWN OCEAN

THE support party turned towards land at about the most northerly point ever reached by ships in this region in summer. In winter no human beings of any race had been nearly so far from the Alaska coast at this longitude. We were three men alone on the edge of the unknown. To that extent the situation had been duplicated before. Nansen and Johansen had been only two. But they were using a tried method—they had food to carry them nearly or quite to land, and would begin to live by hunting only as the journey approached its end. But we were facing the unknown part of the arctic sea with a method not only untried, but disbelieved in by all but ourselves. My companions went about their work quietly, but I know they felt no less than I our dramatic position. Were there animals in abundance waiting in the "polar ocean without life"? Upon the answer depended not only our lives and our success, but a new view of the world we live in.

Since the days before Magellan when men of equal standing could argue about whether the world was flat or round there has been no more fundamental geographic issue than the one we were about to resolve: is the arctic region barren and in its nature hostile to life; or is it hostile merely to life of a southern type and to men who live like southerners, and friendly to any man or animal that will meet the North on its own terms? We were staking our lives on the rightness of the unpopular side of this controversy. But we did not think our lives were in serious danger, and so our resolve was not quite so heroic as it sounds at first. Though Columbus had both numbers and authorities against him, I doubt he ever lost much sleep for fear of his ship plunging in the night over the western edge of a flat world.

Contrary to custom in polar narrative, we have so far said little about a traveling outfit. This difference in narrative corresponds to a difference in method. Other arctic explorers have relied for subsistence exclusively or mainly on what they brought with them when we relied mainly upon the resources of the country to be traversed. Also there is little point in telling just what we took at the start, when some of it was lost early, some had to be thrown away, and some had to be sent back.

When the support party left us we had an outfit that was to last a year and a half in case of necessity; for at the beginning of a trip we always expect that in addition to the immediate summer for which the outfit is designed, we may have to spend the coming winter in some uninhabited region, and again need it to take us to some inhabited place the second spring.

The final party who were going North into the unknown to seek new information, to find new lands if there should be any, and to try out a new theory of polar exploration were Storker Storkerson, Ole Andreasen and myself.

The final outfit consisted of six dogs, the most powerful that we could get and four of them the best dogs I have ever used, and a load of 1,236 pounds on a 208-pound sled, which meant that each dog was hauling 240 pounds. In my diary for April 7th I say that we had full rations for men for about thirty days and dog feed for about forty days. In a way this food was the least important part of our load, for our theory of outfitting is that the essentials are rifles, ammunition and other hunting gear, the scientific instruments, cameras and photographic supplies, diaries, spare clothing, bedding and cooking utensils. After these we take on as much food and fuel as can be hauled without making the load too heavy. Hauling fuel is more important than hauling food, and the kind of fuel more important than the kind of food. Better kerosene burnt in a blue-flame stove than seal blubber burnt by any method we have so far devised, whereas the choice of the most delectable food over seal or caribou meat is negligible to our comfort. A primus stove cooks more rapidly than a seal-oil lamp and is more cleanly than an outdoor fire of seal blubber. But we had lost half our twelve gallons of fuel with Wilkins, and kerosene was destined to give out sooner than food.

As a hunting outfit we had one Gibbs-Mannlicher-Schoenauer 6.5 millimeter rifle with 170 rounds of ammunition, and one Winchester .30-30 carbine with 160 rounds.

As scientific equipment we carried two sextants with the necessary tables for computing latitude and longitude, two thermometers, aneroid barometer, several prismatic compasses, a sounding machine with several leads and about 10,000 feet of wire. The time for determining longitude was carried by an ordinary watch and by a Waltham astronomical watch. The dial of this Waltham watch was numbered to twenty-four hours instead of twelve, a great convenience and almost necessity because in summer when the sun never sets and when at times there is thick, foggy weather for many days in succession, it is often a matter of doubt, if you carry an ordinary watch, whether it shows twelve o'clock midnight or twelve o'clock noon. One may think that only extraordinary carelessness would make you lose track of time so far that you are in doubt which of the twelve-hour periods you are in, but it happens frequently. Under special conditions we may travel fifteen or twenty hours continuously, at times through the most exhausting kind of going. At the end of this you may happen to get a blizzard which induces you to rest in camp a while, free to sleep as long as you need or desire. Where there is no darkness one's irregularity of habits becomes extraordinary. We may not feel any special inconvenience from staying awake twenty or thirty hours, and we are equally likely to sleep for fifteen or eighteen hours. More than once it has happened that we could argue as to whether we were breakfasting in the morning or in the evening. But it never has happened that we have slept so far beyond the twenty-four hours recorded by the Waltham astronomical as to be in doubt of the time it records.

The first day after the support party left us we were able to travel only a few hundred yards before being stopped by open water, and as we had to stop, anyhow, I killed a seal that had stuck his head up through some half-frozen mush. He was within reach of my *manak,* but I could not pull him in because the forming young ice offered too much resistance. The temperature at 8 o'clock that evening was 11° F. but falling, and at that frost we thought the mush might harden enough so that in the morning by the use of skis we could walk out and get him. But our warm period was not yet over and the temperature rose again.

Now that I have mentioned skis I might say something about their usefulness in polar work. I have heard one explorer say that they are better than snowshoes because it is easier to kill dogs with them. This advantage never appealed to us, since we never had any dogs to be killed and have further found that with a good dog kindness works better than a whip. I can not remember the time when I did not know how to walk on skis, and as a boy there was no sport I enjoyed so much as sliding down hill on them. But I have never found them of any particular use in polar work except in restricted areas. Amundsen used them around King William Island and quite properly, for there the ice is level, as it is at Coronation Gulf and at many other points where the sea is shielded by one or another of the islands of the Arctic Archipelago. They are probably well adapted, too, to the level expanses of the Antarctic continent. Where the ice is smooth or the land flat, skis are useful, especially before a fair wind when one can glide almost without effort and at a higher speed than is attainable on snowshoes. But such places are rare in the areas we have had to explore. Among the jaggedly broken ice of the open ocean skis are almost as much out of place as in a thick forest. We would not carry them at all except that they are useful in constructing the frame of our sled boat, a process to be described later. For this purpose we always have a pair or two along, and on rare occasions use them to walk on. On this trip my companions were both Norwegians and habituated to skis, yet none of us thought of using them. I am now of the opinion, however, that late in the spring after the snow begins thawing in the daytime and freezing with a hard crust at night, it might be advisable to use them occasionally where the ice is less rough. The hunting snowshoe of one of several Indian models is a very useful thing in any except the roughest ice. The type used by the Eskimos on the north coast of Alaska—with a length of between three and four feet and a greatest width of about ten inches—is the most convenient.

By the beginning of the present ice trip both Storkerson and I had spent over five years with the Eskimos of northern Canada and Alaska, dressing as they did and making camp after their fashion. It is therefore probable that few arctic explorers have been quite as familiar as we with the technique of comfort. A classic feature of the popular polar narrative is the discomfort of life in camp, but this can never truthfully mark any of our stories. We had an important advantage over even such masters of arctic technique as Peary in the difference of our theory of fuel supply and the consequent temperature of our camps. Peary's parties depended on alcohol or kerosene in limited quantity, which they hoarded, knowing that on the polar ice there are no stores or oil supply stations. And they were always on strict fuel rations. The cooking apparatus was specially designed to concentrate all the heat against the bottom of the cooking pot, allowing as little as possible to escape into the body of the snowhouse or tent. When the pot came to a boil the fire was instantly extinguished. This was certainly necessary if the fuel was to last the whole journey. But with us there are supply stations wherever we go. Our cooking apparatus is not designed to conserve heat, for we want heat to spread and when the cooking is done we do not extinguish the fire until the house is as warm as we care to have it. Then if the camp gets a little too cool we light it again. Whenever the kerosene we leave home with gives out a seal will supply us with blubber; and that blubber we burn freely because we know there is another seal to be had where the last one came from.

One result of this comfortable life is that our diary entries are voluminous on days of idleness. We use fountain pens, and sit lightly clad while we write of everything seen or thought of since the last preceding idle day. April 8th was such a day. The lead that had stopped us the day before had indeed closed, but when we crossed it we were able to travel for a mile only before we were stopped by another lead and had to make camp. After supper had been cooked and the dogs fed, I noted in my diary that for the fifty miles since leaving shore we had never seen a cake of ice of a probable area of over ten square miles, and most had been only a few acres in extent. As they were in sluggish motion a great deal of open water was visible between, and in this water there commonly had been seals.

We had seen very little ice more than a year old. We have already pointed out that ice which has weathered one or more summers is easy to distinguish from that of the current winter by sight and by taste. When sea ice forms it is salty, although perhaps not quite so salty as the water from which it is made, and probably during the winter it loses a certain amount of its salt, although even in April or May ice formed the previous October is still too salty for ordinary cooking uses. But in June and July when rains begin and snow melts and little rivulets trickle here and there over the ice, forming in the latter part of summer a network of lakes connected by channels of sluggishly flowing water, the saltiness disappears, or at least that degree of it which is perceptible to the palate, and the following year this ice is the potential source of the purest possible cooking or drinking water. The ponds on top of the ice are also fresh. During the melting of summer the pressure-ridges and the projecting snags of broken ice change in outline. When the ice has been freshly broken it may well be compared with the masses of rock in a granite quarry just after the blast, or if it is thinner, with the broken-bottle glass on top of an English stone wall. But during the summer all the sharp outlines are softened on the pressure-ridges, so that at the end of the first summer they are no more jagged than a typical mountain range, and at the end of two or three years they resemble the rolling hills of a western prairie. The old ice is easily recognizable at a distance by its outline and on closer approach by the fact that the hummocks are frequently glare. That can never be the case with salty ice, which is sticky and therefore always has snow adhering to it. Being glare, the old ice gives poor footing for men and dogs, yet we commonly prefer it as being smoother. It is not really smooth, but like rolling hills from which the angles of youth have been smoothed by weathering. Young ice is frequently heaped up in indescribable confusion, the jagged ridges of it sometimes fifty or sixty feet above water level and occasionally so rough that an unharnessed dog is unable to make his way over it. When we come to such ridges we have to make a road with pickaxes and progress is occasionally less than a hundred yards per hour. We had had a large number on the way from shore, but they were already getting noticeably fewer, lower, and less difficult to traverse.

April 9th we could make only two miles northing, being compelled to camp by a rising gale. For an hour the wind had been increasing from the southwest, with the snowflakes falling more thickly, when we decided to pick a camp site. We chose it in the lee of a ridge about thirty feet high giving a degree of shelter, but when we were about to pitch the tent Andreasen (whom we always called Ole, and shall in this book hereafter) noticed a crack in the ice. This raised the question of whether the ice was more likely to break in the vicinity of the ridge than farther away. Finally, we decided on an unsheltered, level ice area, pitched the tent and built a snow wall to windward to break the force of the gale. The event showed we probably owed our lives to Ole's having noticed the tiny ice crack and so prevented our camping in the lee of the ridge.

The gale proved to be the worst I have ever seen at sea.* Although the windbreak was built so high that only the top of the tent projected above it, the flapping of the Burberry was so loud and the hum of the breaking ice so continuous, that when in the evening Storkerson went out to stand watch we in the tent were unable to hear him though he shouted his loudest. When he came in again to know why his shouts had not been answered I decided that there was no point in standing guard and we all lay down and tried to sleep.

We knew well that the ice was breaking up around us and we knew what the process was like. Here and there the six-foot ice was separating into pieces. A ridge of these pieces might be marching towards us, with a movement which all of us could picture clearly, but which is best described for those who have not seen it by the analogy of a few pounds of domino sugar dumped on a table and then moved by pushing the whole heap slowly with the hand. If you were to remember the height of each domino of sugar in comparison with a bread crumb, you would realize the size of the ice cakes in comparison with our tent and ourselves, and you could gather what would take place in the path of that moving ridge. It does sometimes happen that a piece of ice as high as fifty feet rises during the course of ten minutes until it stands perpendicular; a moment later, when pushed just beyond the perpendicular, it breaks near the water line and falls over. If such a cake had toppled upon our tent, we would have been crushed like flies between two boards. A realization of it kept us awake into the night. But more clearly than the danger of lying quietly in the tent we realized the greater danger of trying to do anything. To have gone outside and groped about in the impenetrable darkness, where the snow was flying so thick that one's eyes could be opened only to be filled with it, would have been to walk into trouble rather than out. We had picked in the evening what looked to us like the safest spot and sensibly chose to abide by that decision.

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* The support party, according to McConnell's diary, were compelled to camp by this same gale. "Sleet alternated with snow, and soon the dogs were covered with ice," writes McConnell; "as for ourselves, our parkas soon became suits of icy mail."

We wished the poets and magazinists who write about "The eternal silence of the Frozen North" might have been with us in the bedlam of that night. It cannot be properly said that we heard the noise of the breaking ice. We knew it would have been a roar if only the shrieking of the gale and the flapping of the tent could have been stilled a moment, and we felt it, by the almost continuous shivering of our ice floor and the occasional jar from the toppling cakes. But one gets used to danger and one gets tired of staying scared, and before one o'clock all of us were asleep, though perhaps not soundly. About five in the morning the gale had lessened enough for me to be awakened by a dog's howling, which would have been inaudible an hour or two earlier. Storkerson, going outside, was able to see a distance of ten or fifteen yards. The trouble with the dog was that he had been tied in such a way that he was about to be dragged by the rope into the water of a crack that was slowly opening. Storkerson untied him and came in to tell us that a pressure-ridge about fifteen feet high had formed twenty-five feet from the back of our tent. I found later that this ridge was, as was natural, composed of huge cakes of ice, the fall of any one of which upon the tent would have brought our careers to an abrupt ending. The tracks of a bear in the snow showed that a large male had come in the blizzard within fifteen feet of us and within five feet of the dogs. We certainly knew nothing of his visit; it is probable that the dogs knew nothing of it, either, and it is not certain that the bear realized our proximity.

A striking proof of the degree to which the ice had telescoped during the night was in a bear trail which we had crossed about a mile before camping and which now was only about three hundred yards away.

# CHAPTER XVII

## COLDER WEATHER AND BETTER PROGRESS

ONE effect of the gale of April 9th was that the ice which before had been comparatively level was now a chaos of ridges. But the snow which had been falling for several days and was soft and deep when the gale commenced, was now beaten so hard that our feet left little impression. This was an advantage nearly compensating for the roughness of the ice. But a blessing beyond price was the clearing of the air and the beginning of a period of cold weather and northwesterly light airs which was destined to last for about two weeks. Instead of nondescript weather of ten or twenty above zero, we now had propitious cold of fifteen to thirty degrees below.

Ice motion was a natural tendency for a day or two after the gale, but by the 11th the firm frost had bound the floes together. On April 11th we made thirteen miles and for several days a little better mileage each day; for the cold weather held and the ice grew smoother as we went farther from shore until at a distance of over a hundred miles we began to make twenty or twenty-five miles per day. On April 13th and 14th we crossed huge floes of glare ice. As this was evidently ice of the present year and as no new salty ice is ever glare, these floes must have been formed in the fresh water off the mouth of the Mackenzie River, and broken loose and drifted a hundred miles to the northwest.

Although the ice was in the main frozen solid, we found open water every ten or fifteen miles. The leads were commonly running east and west and were of uneven width. Frequently they were as much as half a mile wide at the point where we struck them, but by following them a mile or two in one direction or the other we usually came to a place where a peninsula out from our floe met a similar one from the opposite floe and thus gave a chance to cross. We took soundings in most of these leads but were never able to get bottom with the amount of wire we had, so we are able to say only that the depth was in excess of 4,500 feet (1,386 meters). We had had more wire than this when we left shore, but we had been breaking and losing it at the various soundings.

In outfitting our expedition we had sought advice from many authorities in oceanography as to the desirable sort of sounding wire, and this advice ranged all the way from the people who lay ocean cables and favor single strand piano wire, to that of Dr. W. S. Bruce of the Scottish Oceanographical Laboratory, who advised 9-strand braided copper wire. I had followed the advice of Dr. Bruce and provided the expedition with a large amount of 9-strand wire, and I had also taken the advice of the cable companies and bought a considerable amount of piano wire. But most of the soundings were to have been done by the *Karluk* and the exploratory parties outfitted from her, so she had carried all the braided wire and this was now lost. As fortune would have it, Mr. Leffingwell at Flaxman Island had been able to give me 911 meters of braided wire. At Collinson Point we had got piano wire which proved so worthless that whenever we sounded with it we lost the lead and a piece of the wire. The bottom of the deep sea is covered with a sticky ooze into which the lead sinks, so that a considerable strain must be put upon the wire to release it after sounding. We had carried six sounding leads at the start, but by April 15th we had only two leads left, one of six pounds and another of twelve, and had lost several miles of piano wire. We are therefore able to add our testimony to the experience of Dr. Bruce that any one who expects to sound repeatedly with the same wire will do well to use the strongest. We used for five years and for several hundred soundings the braided wire secured from Mr. Leffingwell without once losing a lead or sustaining an accident.

Whether we were destined to find seals in the deep water offshore with the weight of all polar authority against it and the opinion of the Alaska whalers and the coast Eskimos equally against it, had always been the question in Alaska. Now it was natural that we should watch closely for signs of seals. Here it stood us in good stead that we had for years been in the habit of doing our own hunting. A man inexperienced in woodcraft may walk through a forest without seeing any signs of the presence of moose, though these signs will be patent to the hunter or guide who knows the woods and the ways of animals. So a man who does not realize the presence of seals unless he sees their heads bobbing about in the water of an open lead, might make a long journey over the polar ice and still retain his original conviction that food animals are absent. But there may be on the sea ice inconspicuous signs of seals as clear in their meaning when once noted as bear tracks in the snow.

Ice formed this year is easily distinguished from ice that is two or more years old. Seals are seldom found under ice more than a year old. Of this year's ice much has been crushed into ridges where no seal can live, but here and there are level patches, partly covered with snow, but with the surface visible in rare spots where the wind has blown the snow away. If in a day's journey you keep your eyes carefully on every patch you pass, you will, if there are seals in the region, see now and then a scar on the ice. The previous autumn when this young ice first formed and while it was still mushy, a seal has shoved its head up through to breathe. In doing this he has made not only a hole six to ten inches in diameter, but has come up so suddenly that he has scattered fragments of two or three-inch ice for a foot or two around the hole. Months afterwards the outlines of the hole can still be faintly seen, but more easily discernible are the little pieces of ice in an irregular circle around it.

Food was still in our sled and our main concern was speed. We never had much time to stop at a lead to watch for seals, and when we did stop we never saw any. But every day or two we saw one or more of these scars in the ice, showing that the seals had been there the previous September or October, and if seals were there in September we felt certain they would still be there in April. And so we pushed ahead with increased confidence in a theory the logic of which had seemed to me conclusive from the beginning.

On April 15, 1914, I built the first snowhouse I ever tried to build myself, although as far back as 1907 I described in *Harper's Magazine* just how it could and should be done. A midwinter journey through the Mackenzie delta (1906-7) had provided opportunity for me to see and assist for the first time at the building of a snowhouse. The assistance happened to be confined to carrying the blocks from where they had been cut to where the house was being built, but I was free to observe and analyze every process that went to the making of the finished house. The principles appeared so simple that, in spite of having read in various arctic books that their construction is a racial gift with the Eskimos and a mystery insoluble to white men, I never from that moment had any doubt that I could build a snowhouse whenever I should want to. On my expedition of 1908-12 we often used snowhouses but only in the Coronation Gulf district, where they were always built for us by the hospitable Copper Eskimos, who never allowed a visitor at their own camps to lift a hand to the building of his own house.

Apart from that one year my companions on my second expedition had been exclusively Alaskan Eskimos. These people had never known how to build snowhouses in their own country. When they came east from Alaska into Canada they came as passengers with whaling ships, and from the whalers or from their own traditions they had a prejudice both against the eastern Eskimos and against the snowhouse, which is their characteristic habitation in winter. As a result I have never known but one Eskimo from Alaska who, while residing in the Mackenzie district, learned to build snowhouses. And in spite of the undoubted comfort of these dwellings they have now gone thoroughly out of fashion in the Mackenzie district, so that it is only the older men who were mature before the coming of the whalers in 1889 who are expert at building them. The winter of 1917-18 I built a snowhouse at Herschel Island at the instance of my friend, Inspector Phillips, of the Royal Northwest Mounted Police, who, although he had been stationed at Herschel Island for several years, had never seen one. The curious thing was that the Herschel Island Eskimos gathered about to watch with rather more interest than the white men of the place. The younger Eskimos came because they had not before seen a snowhouse built; the older ones because it struck them as extraordinary not only that a white man should know how to build a snowhouse at all, but that he should demean himself by using so unfashionable a dwelling.

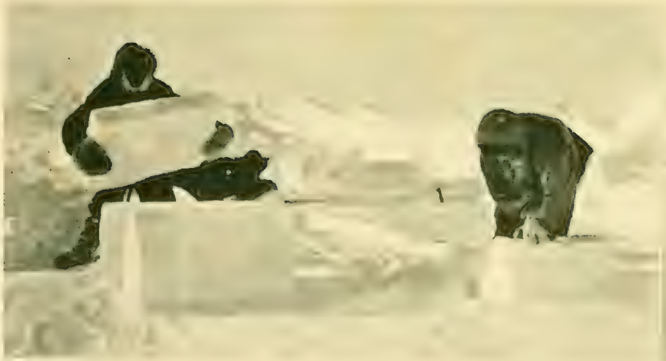
The reason no snowhouses had been built on our ice journey before April 15th was the warm weather of which we have complained. Then when the cold weather came we were eager to travel every moment, and the pitching of a tent is undeniably quicker than the building of a snowhouse, especially when the men are inexperienced. But on the evening of the 14th I had a slight touch of snow-blindness, and that night a lead obligingly opened just ahead of our camp, giving an additional reason for not traveling the next day. This provided the long-wanted opportunity for putting my snowhouse-building theories into practice, and in three hours we built a dwelling nine feet in diameter and six feet high, inside measure. It was as well built as any of the hundreds I have built since, with this difference, that the three of us could now put up a house the same size in about forty-five minutes.

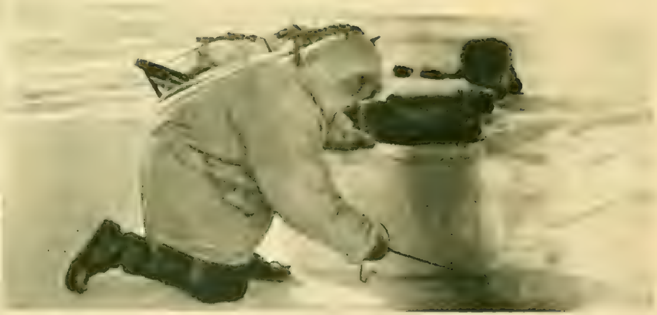
As a preliminary to the building of a house we find a snowbank that is of the right depth and consistency. With our soft deerskin boots we walk around on the drift, and if we see faint imprints of our feet but nowhere break through, we assume provisionally that the drift is a suitable one, but examine it further by probing with a rod similar to a very slender cane. When the right bank has been found we get out our sixteen-inch butcher knives or twenty-inch machetes and cut the snow into domino-shaped blocks about four inches thick, fifteen to twenty inches wide and twenty to thirty-five inches long. These blocks, according to their size and the density of the snow, will weigh from fifty to a hundred pounds, and must be strong enough to stand not only their own weight when propped up on edge or carried around, but if they are intended for the lower tiers of the house, must be capable of supporting the weight of three to five hundred pounds of other blocks resting upon them.

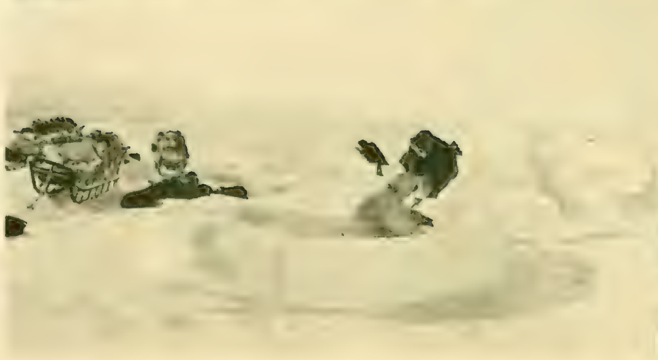
The house itself is built preferably on a level part of the drift where the snow is three or more feet deep. The first block is set on edge as a domino might be on a table, but with your knife you slightly undercut the inner edge so as to make the block lean inward at a very slight angle if the house is to be a big one, or at a considerable angle if it is to be a small one. If, to use the language of physics, you want to lean the block over enough to bring the line of the center of gravity outside the base, this can be done by putting up a second block at the same time and propping one against the other. But this is never done in actual practice, for a house so small as to necessitate it would be too small for human habitation.

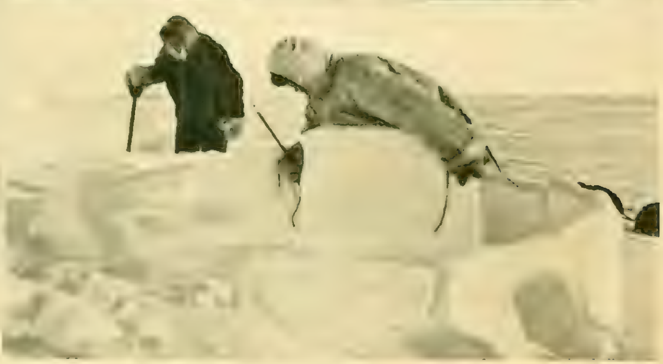
The oval or circle that is to be the ground plan may be determined by eye as the builder sets up the blocks one after the other; but in practice I make an outline with a string with pegs at either end, one peg planted where the center of the house is to be and the other used to describe the circumference, somewhat as a schoolboy may use two pencils and a string to make a circle on a piece of paper. I find that even the best of snowhouse builders, Eskimo or white, if they rely on the eye alone, will now and then err in the size of the house, making it uncomfortably small or unnecessarily large for the intended number of occupants. But with a string a simple mathematical calculation always tells how many feet of radius will accommodate the intended number of lodgers.

It will be seen by the photographs that when you once have your first block standing on edge, it is a simple matter to prop all the other blocks up by leaning one against the other. The nature of snow is such that when a block has been standing on a snowbank or leaning on another block for five or ten minutes in frosty weather, it is cemented to the other blocks and to the snow below at all points of contact and can be moved only by exerting force enough to break it.



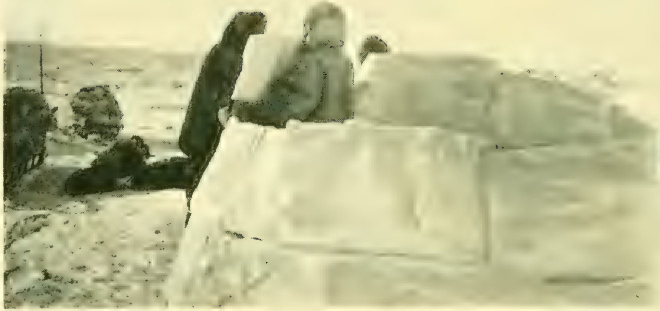


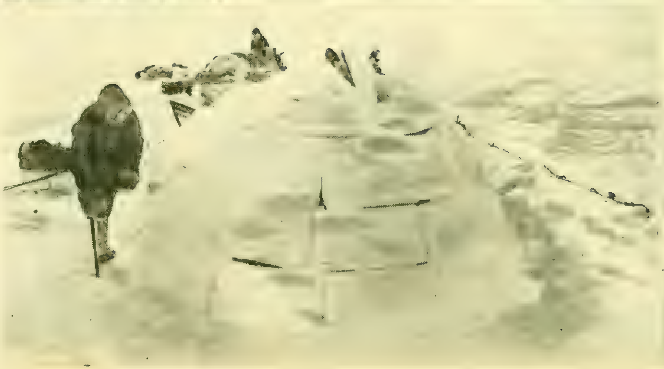


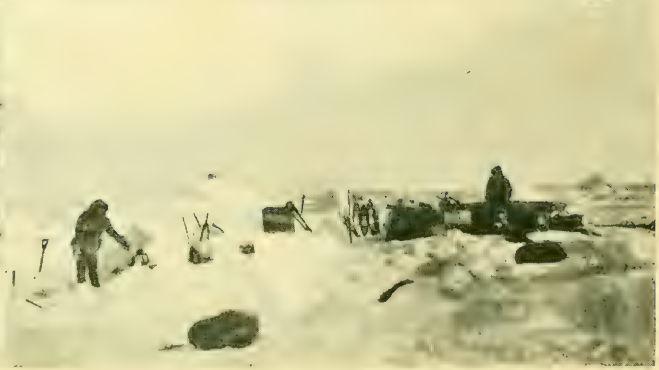


1. The Blocks Are Cut.
3. The First Tier Complete.

2. The First Block Is Set on Edge.
4. The Beginning of the Second Tier.







5. The Third Tier.  
7. The Last Block.

6. The Roof.  
8. The Camp Ready for the Night.

When the first tier has been completed the second can be begun in any of several ways. The simplest is to select any point in the circle formed by your first tier, and from the top edge of one of the blocks make a diagonal cut downward to the bottom edge of the far corner of the same block, or of the second or third block. In the niche thus formed you place the first block of the second tier, its end abutting on the last block of the ground tier. After that you lean the second block of the second tier against the first block of the second tier, and so on, building up spirally. The blocks of each tier must be inclined inward at a greater angle than those of the tier below and at a less angle than those of the tier above. In other words, what you are trying to do is to build an approximately perfect dome.

By the simple experiment of propping two books of the same size against each other on a table, it will be found that they cannot fall unless they slide past each other where they meet at the corners, or slip on the table. But snow is so sticky that these blocks do not slip, and we cut the corners in such a way that they meet with even faces and do not tend to slide past each other any more than do blocks in a masonry dome. Building with snow blocks is far simpler than building with masonry, for stone is an intractable substance and has to be shaped according to a mathematical calculation or moulded in an exact form before it is put in its intended position; but snow being a most tractable substance, such forethought becomes unnecessary. We place the block in its approximate position in the wall and then lean it gradually against the block that next preceded it, and, by the method of trial and error, continually snip off piece after piece until the block settles comfortably into the position where it belongs. A glance at the photographs, especially the ones illustrating the latter steps in the building, shows that the blocks cannot possibly fall unless they first break.

It becomes evident that with photographs and a description and possibly, for surety's sake, a diagram or two in addition, the building of snowhouses could be taught by correspondence to boys in any place on earth where the winters are cold enough and the winds strong enough to form hard snowdrifts that last for several days or weeks. It is therefore curious that the building of snowhouses has until just lately been considered a sort of mystery. Antarctic explorers, like Shackleton, have realized the superior comfort of the snowhouse but have used tents, explaining the apparent inconsistency by saying, "There are no Eskimos in the

Antarctic whom we could hire, as did Peary, to make snowhouses for us." Sir Leopold McClintock was one of the first, if not the first, of polar explorers to point out that snowhouses are so comfortable that their use would make arctic exploration a simpler, safer and pleasanter occupation; but he went on to say that unfortunately white men cannot make them, and that he himself did the next best thing by erecting vertical walls of snow and roofing them over with a tarpaulin. He comments on the inferiority of this dwelling to the real snowhouses, but insists that it is greatly superior to the regulation tent. While it is odd that McClintock should be so far behind the Eskimos with whom he associated, in that he could not build the houses which they built with ease, it is also notable that so far as white men were concerned, he was a generation ahead of his time in realizing their value. Any one who tries it will agree with him that snow walls with a tarpaulin roof make a much better camp than the silk tents used by most explorers down to the present time.

Following the idea that while snowhouses are excellent camps they are a sort of racial property of the Eskimos, Charles Francis Hall was comfortable in them as a guest of the Eskimos but never learned how to build one. The like was true of Schwatka and Gilder and later of Hanbury. Peary used them for years as built for him by the Eskimos, but it does not appear to have occurred to him to learn to build one. So it was curiously reserved for us to be the first explorers to build our own snowhouses for field use.* We have found by experience that an ordinarily adaptable man can learn snowhouse-building in a day.

If four men coöperate in the building of a snowhouse, one usually cuts the blocks, a second carries them, a third is inside building, and the fourth follows the builder around and chinks in all the crevices between the blocks with soft snow. In ten minutes the soft snow in the crevices has become harder than the blocks themselves, so that the house, although fragile in process, is moderately strong within half an hour.

When the snow dome has been otherwise finished, a tunnel is dug through the drift into the house, giving a sort of trap door entrance through the floor. Most Eskimos, failing to understand certain principles of thermodynamics, use a door in the side of the house. But it is obvious that if a door in the wall is open and if the interior of the house is being artificially heated, then warm air being lighter than cold, there will be a continual current of heated air going out through the upper half of the doorway, and a cold current from outside entering along the floor. If the door is on a level with the floor or a little below it, the warm air from the house cannot go out through the door, even with the door open, because warm air has no inclination except that of rising. Similarly cold air cannot come in through the door in the floor so long as the house above is filled with warmer air, for two bodies cannot occupy the same space at the same time. It is accordingly never necessary to close a door the top of which is on a level with the floor of the house or lower, and we leave our doors always open. In heating the house, whether by blue-flame kerosene stove, seal-oil lamp, or the bodies and breathing of people, poisons accumulate and ventilation becomes necessary. So we have a ventilating hole in the roof, depending in diameter on conditions of external temperature, abundance of fuel and on whether people are awake or asleep. The cold fresh air from outside then wells up from the door below into the house as fast as and no faster than is necessary to replace the hot air passing out of the ventilator at the top.

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* So far as I know, the first explorer who took steps to have his men learn snowhouse building was Amundsen at King William Island. Two of his men took lessons one or two days, but the expedition does not seem later to have made use of whatever skill they acquired.

When the tunnel and door have been excavated, the bedding is passed into the house, and a layer of deerskins with the hair down is spread to cover the entire floor except just where the cooking is to be done. Over this layer we spread another layer of skins with the hair up. The reason for the double insulation is that the interior of the house is going to be warmer presently and people are going to sit around on the floor and later are going to sleep on it, and if the insulation were not practically perfect, the heat from the cooking and from the bodies of the sleepers would penetrate through the bedding to the snow underneath, and by melting it would make the bedclothes wet. When the temperature of the weather outside, and consequently of the snow inside, is zero Fahrenheit or lower, a double layer of deerskins will prevent any thawing underneath the bed, the snow there remaining as dry as sand in a desert.

When the floor has been covered and the bedding, cooking gear, writing materials and other things brought in, a fire is lighted. The end to be gained if fuel is abundant is to heat the house until the snow in roof and walls begins to thaw. If the fuel allows it we sometimes bring the temperature temporarily as high as eighty degrees Fahrenheit, and then keep feeling of roof and walls to watch the progress of thawing. This, of course, is most rapid in the roof as the hot air accumulates against it, and usually the lowest tier of blocks near the floor does not thaw at all. Thawing proceeds without dripping, because dry snow is the best sort of blotter and soaks the water into itself as fast as it forms. When the inner layer of the roof has become properly wet with the thawing and the walls damp to a less degree, we either put out the fire or make a large hole in the roof, or both, and allow the house to freeze. This glazes it on the inside with a film of ice, giving it far greater strength, with the further advantage that if you rub against the glazed surface scarcely anything will adhere to your clothing, while from the dry snow before the glazing takes place you would get your shoulder white, with a good deal of snow perhaps falling on the bed.

Now the house is so strong that without taking special care any number of men could climb on top of it. Polar bears may and occasionally do walk over these houses and I have never known of one breaking. Their strength, however, is somewhat the same as the strength of an eggshell, and while they are difficult to crush with pressure, they are easy to break with a blow. A polar bear has no trouble in getting in if he wants to, for one sweep of his paw will scratch a great hole.

If the house was built at fifty below zero, each block in the wall was of that temperature and contained what we may unscientifically speak of as a great deal of "latent cold." To neutralize this it is necessary to keep a temperature of about sixty degrees Fahrenheit for a considerable time. Snow is so nearly a non-conductor of heat that when the "latent cold" has once been neutralized, the heat of our bodies keeps the temperature well above the freezing point even with the hole in the roof open for ventilation. But if the weather gets a little warmer than when we made camp, our body heat may be too great or the cooking may raise the temperature high, and the roof will begin to melt. This we take not so much as a sign that the house is too warm as that the roof is too thick, so we send a man out with a knife to shave it thinner, perhaps from four down to two inches, giving the cold from outside a chance to penetrate and neutralize the heat from within, stopping the thawing. It may happen the next day that the weather turns colder again, and in that case hoar frost begins to form on the roof and drops in the form of snowflakes on the bed. That is a sign that the roof is now too thin and a man goes out with a shovel and piles on enough soft snow to blanket it.

Two hours after building is begun the dogs have been unharnessed, each tied in his place and fed, everything outside has been made snug for the night, and every man is comfortably inside the snowhouse, eating a warm supper. With a feeling of security that in the early part of our sea exploration was based merely on confidence in our theories but later came to rest on experience as well, we customarily sat after supper burning merrily the kerosene or seal oil, firm in the faith that to-morrow would provide fuel no less than food. This explains any seeming inconsistency between our accounts of warmth and well-being and the stories of others who, like us, have used snowhouses but have found them cold and comfortless. They were on fuel rations and we were not. It was the economizing of fuel rather than the severity of the climate or the inadequacy of the housing that kept them cold. In many a well-appointed house in our civilized lands people have shivered in the last few years because they were on an allowance of fuel. It may well upset traditional ideas of the Arctic and of exploration to realize that when Europeans and Americans in the winter of 1917-18 were wrapped in rugs before a coal-less grate or by a chilled radiator, our men were sitting in their shirt sleeves, warm and comfortable, in snowhouses built on the floating ice of the polar sea.

I am in the habit of repeating and most of my companions agree that hardships are not necessarily involved in the work of the arctic explorer. On the sea ice, of course, there is the possibility that the cake on which you stand may break up. It is also true that most of us prefer other food to seal meat, but all of us who have spent more than a year "living off the country" are quite of the Eskimo opinion that there is no food anywhere better than caribou meat; and if you have any experience in the life of a hunter you will realize that in the winter when we are hunting on some such land as Banks Island and when we sit in these warm houses, feasting with keen appetites on unlimited quantities of boiled caribou ribs, we have all the creature comforts. What we lack, if we feel any lack at all, will be the presence of friends far away, or the chance to hear good music. At any rate, it is true that to-day in the movie-infested city I long for more snowhouse evenings after caribou hunts as I never in the North longed for clubs or concerts or orange groves. And this is not peculiar to myself. The men who have hunted with me are nearly all of the same mind. They are either in the North now, on the way back there by whaling ship, or eating their hearts out because they cannot go.

It is not possible to give to the wonderful dogs too much credit for any success on this journey. The day of April 17th, for instance, they were still hauling over two hundred pounds each. The snow was firm but rough, and the sled was continually going up and down over hard drifts. There were also pressure-ridges to cross, though none bad enough to necessitate the pickaxe. It is true that the dogs alone could not have taken the sled over some of the ridges, but it was only there that the men did the least bit to help. The rest of the time they were running beside the sled, commonly with hands resting on it, and I was running ahead. We made that day an average of nearly four miles an hour, which meant a speed of over five miles on the level stretches.

Although the dogs themselves were excellent, part of this superiority was due to the harnessing. When dogs are harnessed fanwise as they are in Greenland and as they have been by many explorers, it is only, as I have said, the dog in the middle of the team that can pull straight ahead; the others pull at considerable angles with the course of travel, so that a part of their force is lost. This in some measure explains why it is that few explorers have been able to haul more than a hundred pounds to the dog, which is less than half of what ours hauled. But I believe the main superiority was in the breed.

In eleven years of experience in the Arctic I have used dogs of all sorts. Some were brought from Greenland by Amundsen on his *Gjoa* voyage of 1904-06 and left by him near the Mackenzie delta, where I used them. We have also at different times had a hundred or more Eskimo dogs from the district around Victoria Island, where this dog is presumably as pure as he is anywhere in the world, for there the people and consequently the dogs have been least in touch with the outside world. We have also used several hundred dogs of mixed Eskimo descent from the Mackenzie district and the north coast of Alaska, where the dogs as well as the Eskimos themselves have been subject to outside contact for from thirty to a hundred years. We have had a few Siberian dogs and about fifty of the type most favored for driving by the miners around Nome, Alaska. On the basis of our experience with all these varieties we have come to a conclusion on the whole very unfavorable to the Eskimo dog.

For one thing, the Eskimo dog is too small. Those we have had ran in weight from fifty to seventy pounds, and to haul such a load as our six dogs were carrying would need at least nine of the best Eskimo dogs. The disadvantage of having nine dogs as against six is plain. There is the trouble of harnessing three more in the morning and of unharnessing, tying and feeding them in the evening. True, a bigger dog needs a little more food, but six dogs weighing 120 pounds each will do well on less food than is necessary for nine dogs averaging 70 pounds. Incidentally I will point out here that much dissatisfaction with big dogs when used among smaller dogs rises from the fact that they are given a standard ration, each one getting a pound or a pound and a quarter of food. If this goes on for days or weeks, eventually the seventy-pound dog will be in full strength when the bigger dog has become weak from starvation. Any intelligent white man can see why a big dog needs more food than a small one and can appreciate how he is going to get full value for the extra food. But every Eskimo with whom I have discussed the matter says that just as small men eat as much as big men, so small dogs should have as much food as big dogs, and Eskimo opinion is almost universally against the big dog, since he will not keep fat on a ration that suffices a small one. Another great advantage of the big dog is that when after several months on sea ice we eventually land on some island, we have to cache our sleds and continue with pack dogs. Here I have found that size is of special importance. Not only will the bigger dog carry a heavier load, but he carries it higher above the ground. A small dog will drag his pack through water when a bigger dog carries it high and dry.

Our big dogs have not been of any one breed. Some have been half Eskimo and half St. Bernard; others have been half mastiff, and some appear to have a considerable admixture of wolf. Just as with men, the excellence of dogs is largely a matter of temperament. Here, next to his size, lies our grievance against the Eskimo dog. When he is fat and well cared for he works with a great deal of spirit, a sort of boyish exuberance. But as the boy has not the stamina of the man and wants to rest when he gets tired, so the Eskimo dog stops pulling when he feels like it. The white man's dog, in many cases at least, has character, or what corresponds to it. He seems to have a sense of duty, and especially if he is well treated will continue working hard though his stomach be empty and his legs tired. When the Eskimo dog is tired you will have to resort to the whip. This to me is always disagreeable. It is also my experience that you can no more get the best work out of a dog team by whipping them than a slave owner could get the best service out of enslaved men by inhumane treatment. I have seldom seen an Eskimo dog that will pull well the second day without food, but I have seen half-breed St. Bernards who would pull, perhaps not with the same strength, for that would be impossible, but with the same willingness day after day while their strength lasted. In our last five years' work we never lost a dog from hunger, and some of our dogs were never without food long enough to affect their willingness to work. The Eskimo dogs that had to meet the trial proved mostly quitters and needed a whip the second foodless day.

The Eskimo dog has one advantage in the soundness of his feet, and another in his good fur. Certain kinds of white men's dogs have even better fur, but I know none that have feet as sound, or at least as little affected by adverse polar conditions. It is in this soundness of the feet that half Eskimo blood gives the chief advantage above the pure bred St. Bernard, whose fur also needs improvement.

One of the most spectacular ice crushes of our experience happened in our path on April 18th. A floe to the north was moving east with reference to ours at the rate of about twenty feet per minute. There was such force behind the two floes that although the ice was over six feet thick, their relative speed seemed undiminished even by their grinding against each other with a force that piled up a huge ridge. The ice buckled and bent for several hundred yards, but the ridge was on one side of us, and we were conveniently able to retreat. The toppling ice cakes sounded at half a mile like a cannonade heard over a stormy surf on a rockbound coast. The surf-like noise was the actual grinding of the edges where the ice was being powdered rather than broken. There was, too, a high-pitched screeching, like the noise of a siren, when a tongue of six-foot ice from one floe was forced over the surface of the other. The pressure ceased in about two hours, when we crossed the newly-formed ridge and proceeded on our way.

All this time we had been traveling in a direction a little west of north. But frequent observations for longitude showed that our course was a little east of north, which had to be accounted for by the eastward motion of the whole surface of the sea. By the 20th we were entering a region of less and less game. We saw only about one polar bear track every twenty miles, and these tracks were mostly a month or two old. The scars on the ice showing the presence of seals the previous autumn became fewer, and we never saw any seals in the leads, although we occasionally stopped to watch for them an hour at a time. This was disconcerting and gave us a good deal of concern. With the decrease in game signs there came back to our memories with increasing weight the statements of the Eskimos on shore that we would find no seals at a great distance from land, and the arguments by which our whaler friends had bolstered up these views originally borrowed from the Eskimos. There came to mind with increasing force the dicta of geographers and explorers summarized in encyclopædias and reiterated in every polar book, "the polar ocean without life." I had answered their arguments readily enough on shore, but was our verbal logic to be disproved by the superior logic of events? My diary shows that our faith was at times shaken, though never badly enough for us to talk seriously of turning back.

My companions were as eager as I to make a success of the journey, and what worried us more than scarcity of game signs was the implacable advance of the sun in the heavens. It was getting perceptibly higher each day and there was no longer any darkness at night. The temperature still kept mercifully well below zero, but we knew it was only a question of days until the wind would change to the east and the first thaw of spring be upon us. Accordingly we said little of the danger of running out of food and much of the necessity of hurrying on, but most frequent were the remarks on our misfortune that we had not been able to start the journey a month earlier. It is doubtless true that there is no use crying over spilt milk, but it is equally true that there is nothing more human than to do so.

The scarcity of game signs would have troubled us less had we had that understanding of the polar sea which we acquired during the next five years. We now know what we then but believed upon reasoning with which the authorities disagreed, that the presence or absence of seals has nothing to do with latitude as such, but mainly with the mobility of the ice. In any region where we have violent ice movement and consequently much open water, we have a large number of seals. Food they can find everywhere in the ocean but in certain places they lack the easy opportunity to come up and breathe. During the summer they congregate in regions of open water, deserting those where the ice lies approximately unbroken. Then in the autumn when young ice forms they make for themselves breathing holes which they use all winter. If this young ice remains stationary the seal remains stationary with it. If it floats in any direction he travels along, for his life depends upon his never going far from his breathing hole so long as the ice around it remains unbroken. If it does break and if leads are formed he may do a certain amount of winter traveling, but this traveling ceases when the first hard frost forms new ice over the leads, which when open are the routes of travel.

From the point of view of seal life there are in the polar ocean certain desert areas. They are caused by the sluggishness or absence of currents, just as deserts on land are caused by lack of rainfall and porousness of the soil. And just as land deserts are restricted in area, so are the ocean deserts. The experienced overland traveler crossing a new continent would know when he was entering a desert. It would then be a matter of judgment whether he was to turn back and give up his journey or whether he should attempt skirting the desert or making a dash across it. So it is when the ice traveler who depends on game for subsistence comes to one of these sea deserts. The signs are in the thickness and evident age of the ice, in the fewness of the leads and of other signs of motion, and in the absence of traces of seals on such patches of young ice as may be visible. Just as there are on land arid and semi-arid areas, so there are at sea regions of scarcity of seals and regions of their nearly complete absence. But just as on land a semi-arid belt with scant vegetation may be but the introduction to a real desert, so the area of scarce animal life into which we were entering might merge later into another of total barrenness.

With summer imminent we all felt that speed was the main consideration, both for success and safety. Our loads were getting lighter as the supply of food grew smaller. But instead of restricting our rations and tightening our belts we used to eat three full meals a day, and we fed the dogs almost to surfeit, with the idea that the more quickly the loads were lightened the greater our speed would be. We should really have thrown away one or two hundred pounds of food at the start, but we never had quite the strength of mind to do that. For one thing, the chocolate and malted milk were as yet more palatable to my companions than the less familiar seal meat. We pampered ourselves in disregard of good judgment and lightened the loads no faster than much feeding by men and dogs could do it.

We were making a new departure in polar exploration, not only in intending to live by hunting when the food was gone but also in gormandizing while yet we had food. We were traveling over ice that floated over an unknown ocean, away from all known lands and without any intention of turning back soon. I think I have read nearly all north polar literature and I never read of any party that under such circumstances would not have tightened their belts and saved every scrap of food. I said so exultantly to my companions and Storkerson helped me exult, for he had lived by hunting for years and had acquired the hunter's temperament. But Ole had more misgivings than he owned up to.

By April 23rd in latitude 75° 15′ N. we had entered an ice area of a new sort. Up to this time every visible lead had given evidence of much lateral motion; that is, the floe on one side had evidently been moving east or west with reference to the floe on the other side. But here we came to leads which had been opening and closing at intervals all winter without any lateral motion. There would be a belt of three or four-foot ice formed a little after Christmas; then might come a belt of fifteen or twenty-inch ice formed a month or so ago, and in the center of the lead five or eight-inch ice not more than a week old. A lead of three such belts evidently had opened only three times during the winter, but there were others which showed they had opened half a dozen times or more. But whether in four-foot ice or eighteen-inch ice, the break when the lead had opened had never been a straight line. Little projections and peninsulas on one side corresponded to indentations and bays on the other side, and when we found that, we knew the ice movement had been a simple opening where the sides of the crack had withdrawn straight away from each other without the lateral motion common inshore. In other words, this ice was either not drifting at all, or the areas on both sides of the leads were drifting in the same direction and at the same speed.

For the present we had light northwest breezes and our sextant observations showed we were drifting each day a very little to the east. But as we knew that Banks Island was to the east and only a few hundred miles away, we believed this slight drift due to nothing but the crushing and buckling of the ice against the Banks Island coast.*

Up to April 25th we had been traveling daytimes and sleeping

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*We now believe that, for a reason unknown, there is an eddy in the Beaufort Sea. We know from observation that at certain seasons there is a westward movement of the ice along the north coast of Alaska. It carried the *Karluk* a thousand miles in four months, from Camden Bay, Alaska, to Wrangel Island. This westward current seems but the continuation of a southward current we have observed on every occasion west of Banks Island and Prince Patrick Island. We suppose there is a corresponding eastward current *offshore* north of Alaska. Three hundred miles or more north of Alaska the current is east, we think, bending south at Prince Patrick Island and west when it comes near the mainland. A glance at the map will make this clear.

at night, but on this date we changed to night travel. The season was too late for snowhouses and the light at night was sufficient for traveling. Although my diary contains almost every day some expression of thankfulness that the cold weather and westerly winds were continuing, the temperature at noon had become such that snow was melting on any dark surface, though it might be below zero in the shade. We could now take solid comfort in our daytime camps, for the tents which kept the wind off let the bright sunshine through and heated the interior—even, once or twice, to an undesirable warmth. And we no longer had to take pains to keep our clothing dry, for by camping in the morning we could hang damp garments in the sun and get them dried before evening.

## CHAPTER XVIII

### WE BURN THE LAST BRIDGE BEHIND US

THE distance covered April 25th was twenty-four miles, a good day with a bad ending, for towards camping time the wind made the dreaded shift to the east, with fog and a light fall of snow. This meant probably drifting west, so that if we desired to travel east we should meet leads of open water running north and south parallel to the distant coasts of Banks and Prince Patrick Islands, and making a landing on either of them more difficult.

Now that the east wind was upon us the temperature rose, and the leads formed by the ice motion refused to freeze over. When the temperature is twenty or forty degrees below zero, as in February or March, the opening of a lead is not a serious matter. It may stop you one day, but the next it has been bridged and you can cross it if it happens to lie athwart your course. Occasionally luck is such that it lies almost in the direction you are going. In that case the ice traveler can have no better fortune than to meet with a lead. If he finds it already frozen over, it is as if he had come out of the woods upon a paved road, and if it is still open he knows that a little wait and a night's encampment will convert it into a boulevard for fast and easy traveling next day. But at the end of April, even though the lead may be running in your direction and though it may be a week old and the ice six or ten inches thick, still, it is so soft and treacherous from the weakness of the frost that it does not form a safe road and a bridge of older ice must be found.

A day with the east wind as well as our theoretical knowledge of ice conditions decided us at this point to alter our course. We were in the vicinity of north latitude 73° and west longitude 141°. With a week or two more of cold weather (or, as we used to say "Had we started two weeks earlier") we could have kept on north for two degrees of latitude and then turned east for a landing on the southwest corner of Prince Patrick Island. But clearly the season was too late for that. So we decided to take roughly a great circle course for Cape Alfred, on the northwest corner of Banks

Island. At the time of turning east we had on hand 147 pounds of man food and 74 pounds of dog food, which meant provisions for men for about fifteen days and for dogs for about ten days.

Under date of April 26th I wrote under the caption "Plans" the longest diary entry of the whole trip. This was because we had come in a sense to a parting of the ways. We were two hundred miles from Alaska, we had provisions for two weeks only, and the signs of game were getting fewer every day. Without having exactly lost faith in the presence of seals in every part of the Arctic, my men were becoming a little dubious about it. We had been drifting before light northwesterly airs, but now we were encamped on a solid floe waiting to see the effect of the east wind. If it drifted us west with great rapidity I should have turned reluctantly towards Alaska, for a westward drift would mean a great deal of open water between us and Banks Island. On the other hand, should we not drift materially to the west we had in this a sign that the ice was fairly continuous from us to Banks Island where we might hope for a landing. The north coast of Alaska is known to be subject in spring to violent ice movement and the current is considered to be prevailingly westward. I thought then and still think that any attempt to land in May or June on the north coast of Alaska with a sledge party coming from the Beaufort Sea has the imminent hazard of being swept by the current west beyond Alaska into the ocean north of Bering Straits.

When I am lost in a storm, or when I am in doubt of any kind, I frequently find that my feelings, or so-called "instincts," are in conflict with deliberate reason, and I have invariably found that the "instincts" are unreliable. I may have the strongest feeling, which almost amounts to a conviction, that my camp lies in a certain direction, for example, when a careful review of circumstances shows that it really ought to lie in another. I confess that I now had similarly, in common with the men, the feeling that our safety lay in returning over the known route to Alaska, but all available facts indicated that such an attempt would be the most hazardous course. To the south lay known dangers but to the east we were in complete ignorance of conditions, and by elementary reasoning the chances were at least even that the conditions towards Banks Island of which we knew nothing would be as good as the conditions to the south, which we knew to be bad.

My companions were more strongly impressed with the dangers of the unknown. They pointed out that we knew that the sealing to the south was good, while it might easily be bad to the east.

They said that were we to land on Alaska we should find a settled coast, but that in Banks Island we had an uninhabited country where game might be scarce; moreover, our ships were to the south, and were we to return to them we could sail north to Banks Island during the coming summer. Now as to sailing to Banks Island in ships, my objection was that we should be compelled by the ice to skirt the mainland coast part of the way, or at the best make a diagonal course from Herschel Island to Cape Kellett. In doing this we should be sailing through waters that have been sailed by whalers since 1889, while our ice journey along the great circle course to Cape Alfred would take us through territory unsailable and unknown. Exploration of unknown territory was of the highest importance, and was the main duty assigned us by the Government.

But all considerations were outweighed by the dangers of return to Alaska. I believe the chances are at least three in four that any party attempting this late in the month of May from a distance to seaward as great as ours would be swept to the west beyond Point Barrow. If they were on a solid ice floe they might survive the summer in the ocean east of Wrangel Island, but that also is an explored area and the summer would be wasted. If the floe were to get into the open in the vicinity of Point Hope, wave action might break it into fragments, with the probability if not certainty of a tragic ending. This view has been strengthened, so far as the year 1914 was concerned, by the fact that all whalers and Eskimos on the north coast of Alaska have told me that that season proved an especially open one and that the inshore ice during the spring was in continual rapid westward motion. This indeed was one of the reasons why our death was so universally assumed among them. They did not conceive of the possibility of our having gone to Banks Island, but felt sure we would attempt a landing on the Alaska coast. Conditions there being exceedingly bad, it was believed that we had either been lost in some hazardous traverse over ice made rotten by the spring thaws, or been drifted into the sea west of Barrow.*

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* This opinion was given added weight by Captain Pedersen, who upon his return to San Francisco gave out a newspaper interview in which, after complimentary references to our ability to live by hunting, he said that our only chance of survival was that we might in the following autumn or spring be able to make a landing on Wrangel Island, the New Siberian Islands, or some other part of northeastern Siberia. This opinion of an ice master who knows more than any one else about sea conditions north of Alaska as encountered by whaling ships, became the chief reason why the eyes of those friends who still had hope of our being alive were turned thousands of

It was a bit hard for me to persuade the men to continue towards Banks Island. Storkerson was used to living on meat, and that part of our future did not worry him, but this was not the case with Ole, who had the dread of a meat diet common to those who have not tried it. But when their minds were made up to take the risk they became wholly enthusiastic for the plan and energetic in carrying it out.

This is a proper place for a tribute to those qualities which made my companions ideal comrades under difficult conditions, but as the qualities themselves appear constantly in this narrative I shall not attempt a tribute more direct, for it would be certain to fall short of my feelings and desires.

For the first few days after turning towards Cape Alfred we found good level ice, and the leads all proved to have crossing places so that we were able to make from fifteen to twenty-five miles per day. The night between May 2nd and May 3rd we had the midnight sun for the first time. No more than a third of it went that night below the ice horizon.

The first ten days of May were a period of anxiety. The sun was rising mercilessly higher and higher and we struggled towards Banks Island with the fear of summer upon us. Kerosene gave out May 5th, but we saw no seals in any of the leads and dared not wait and watch for them, for every hour was precious. When we wanted something to cook with, necessity invented it. As part of our bedding we carried two grizzly bear skins, and we had a pair of scissors. The long hair of the skins proved effective, though scarcely fragrant, and half a pelt was enough to cook the meals for a day. After a long period of gorging ourselves to lighten our loads, we now found the sled nearly empty and went on half rations for the only time on the whole expedition. This abstemiousness resulted from our unwillingness to stop and hunt, for we were now sure that the warm weather was going to make it difficult to reach Banks Island, and were even beginning to fear it might make a landing before next fall impossible. This, in turn, would result in our missing the *Star* at the Norway Island rendezvous. The dogs were on

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miles farther west than the point at which my written word had said we would make our landing. It is interesting to me, though scarcely flattering, that I have found among hundreds of editorials and thousands of news stories from the daily papers, not one opinion to the effect that we should be found where I had said the *North Star* was to look for us.

half rations, too, for the same dread of summer weather which prevented our stopping to hunt seals for ourselves prevented our hunting seals for them.

I find from reading my diary that this period was more anxious than I now realize. Our faith was really firm but, like some of the believers of old, we had an occasional hour of doubt. The theory was mine, so I felt more free than either of my companions to criticize it, and sometimes in the evening after a hard day's march I wrote down that it was possible after all that Eskimos and whalers and polar explorers were right and that food might prove scarce on the Arctic ice. We were passing open lead after open lead without the sight of a seal; though I reminded myself that in some of the best sealing waters of northern Alaska I had spent days and often weeks watching beside open water without seeing a seal, and then one morning I would come down to the water to find a dozen swimming about within gunshot. I hoped and expected that it would prove so again whenever we should be forced at last to stop for hunting.

Besides the advancing summer we had a second argument for traveling fast towards Banks Island. This was that Eskimos, whalers and explorers alike believed seals to be more common in the vicinity of land than in the deep waters far offshore. If this were true, the nearer we got to Banks Island the better the chances would be of getting food when provisions ran out.

Perhaps as a result of being on short rations, I find several diary notes on the comparative excellence of various kinds of food. We had with us pemmican, bacon, butter, peameal, rice, chocolate, and malted milk. We found ourselves in agreement that four pounds per day of peameal and butter or peameal and bacon for the three of us was a more satisfactory diet than six pounds of pemmican and biscuits. For one thing, the standard explorers' breakfast of pemmican, biscuit and tea predisposes to thirst. There is no difficulty in quenching thirst by eating snow once you have rid yourself of the curious superstition that snow-eating is dangerous, but even at that it is preferable not to become thirsty.

Unless it be religion, there is no field of human thought where sentiment and prejudice take the place of sound knowledge and logical thinking so completely as in dietetics. It is therefore not surprising that actual experiments with diet, especially those instituted by stern necessity, should yield results contrary to conventional expectations. I have never met any one inclined to believe that he would find suitable and in every way satisfactory as a diet for a long period a thin stew or soup made from rice, butter, chocolate and malted milk boiled together. But a dozen men have now tried this diet on our ice trips and most of us prefer it to anything else we have tried. Some of my men, partly because they were sailors with acquired food tastes, have preferred peameal in place of rice. In point of theory peameal would undoubtedly be better than rice if the chocolate were absent, but so long as there is chocolate to supply the protein I prefer the rice; if for no other reason, because it is easy to cook.

Many travelers have refrained from carrying rice in the belief that it was not easy to cook. True, the cook-books tell you some such thing as that you should boil rice for twenty minutes. This would surely be a waste of fuel for those who travel on fuel rations, although for ourselves we need not care. But we have found that if we put the rice into cold water and when the pot comes to a boil set it aside for a few minutes, the rice is thoroughly cooked before it cools enough for eating, and not more than one minute of actual boiling is needed. We used no more fuel in boiling a pot of rice than Peary used in making a pot of tea. On some trips we have carried things as difficult to cook properly as beans. Time for cooking them cannot be taken except on stormbound days, but on such occasions boiling them is a pastime.

I am now of the opinion that the fewness of the seal signs at distances of two or three hundred miles from shore was due mainly to the hurry we were in. The level places where they might have been found happened only occasionally to be on our actual route, and as we never felt we could stop and look around, nothing could be noticed except what was actually in our way. How much is it explicable, then, that others may have failed entirely to notice seal signs because they have been possessed with the idea that there was no use looking for game signs when game was absent, or else that seals if present could not be secured? For well-known explorers, so far as I know, have not been experienced seal-hunters as Storkerson and I were, and seem to have been quite unfamiliar with the technique of seal hunting, even theoretically.

On the evening of May 7th our faith in the presence of seals had confirmation. We had pitched camp on the shore of a lead about a mile wide, covered with young ice not strong enough to bear a man. We had camped a little earlier than usual, and while the men were cooking supper I sat for about an hour on top of a high ice hummock, studying the lead with binoculars for several miles in both directions as though I had been on a hilltop near the bank of a large river. The glasses showed roughnesses on the young ice, but from their distance I could not be sure that they had actually been made by seals coming up to breathe. I don't know whether it was a sign of the weakness or the strength of my faith that when after an hour's watching I saw the head of a seal come up through the ice about a mile away, I gave an involuntary shout that brought my companions out of the tent.

A seal a mile away in mush ice is as safe from the hunter as if he were on the other side of the earth. Furthermore, we still had food for two or three days at half rations and we were really enjoying the experience of sailing close to the wind, although I do not think the same can be said of the dogs, lacking our point of view. All three of us might have taken our station beside the lead, to wait the possible reappearance of the seal close enough for killing. I think Ole felt something like doing it, for he was always a great one for "playing safe" and this was his first experience of "living off the land." But Storkerson and I had acquired the typical Indian or Eskimo attitude. Instead of using every effort to get this first visible seal, we merely satisfied ourselves that he actually was a seal and that we were now in seal country, and then went back to the tent to feast our minds on anticipated seals and to indulge ourselves at one meal with half our remaining and for the last few days hoarded food. With about a day's food actually on hand, we thanked our stars that the time of measuring it by other standards than our appetites was over, and assured each other that we would never again be so skeptical of the bounties of the Arctic as to begin limiting our eating while we had a week's store ahead.

Those who have never undergone hunger expect death from it to result in a short time. Going without food for a few days constitutes in the imagination of some a great hardship—a curious belief to persist and be so nearly universal when the few people who have tried it for a considerable number of days tell us that little suffering is involved, unless it be mental. The prisoner who waits in a comfortable cell and has several good meals brought him each day may undergo agonies if he has a sufficient imagination and knows that the electric chair is only a few days off. So it may have been on occasion with polar explorers, that when their food was gradually giving out they suffered mental anguish because of the death which in their mind's eye they saw coming upon them. Had they been of optimistic temperament, expecting deliverance in one form or another, their suffering as such would scarcely have been worth the name, though they might have starved to the point of extreme weakness. Physical suffering may well have accompanied the mental anguish in such cases as that of the Greely Expedition at Cape Sabine, for with them hunger was kept at a tantalized wakefulness for half a year by food enough to keep up appetite though it could not sustain strength. They knew each day they would not get enough and doubted—three out of four of them rightly—whether summer and the relief ship would find them alive. Simple starvation, that comes to death in a few weeks, any one should choose readily in preference to, for instance, cancer, which will carry off one in nine of our friends who have passed middle life. But no moral trial can have been harder, no death more cruel, than that of Greely's men.

In the light of the four succeeding years I still approve of the rejoicing of May 7th and the light-heartedness with which we then looked towards the future. Relying merely on memory, I should now be unable to realize that four days later a mental reaction had set in and we were again in the depths of gloom. Summer with its adverse traveling conditions was making itself more and more felt. What we now feared was no immediate disaster but failure to make a landing on Banks Island so as to meet the *Star* at the appointed rendezvous. My diary entry for May 11th says something of that kind:

"The lead that stopped us yesterday closed during the night by the young ice fast to our floe coming in touch with the opposite 'shore.' Storkerson, who had this watch, did not consider the young ice a safe bridge for crossing and neither did Ole, who had the watch from two o'clock to four-thirty. When he called me for my watch I at once investigated the young ice and found it rotten and treacherous but six inches thick, and so decided to take chances. We crossed safely at 6:10. Traveled about E. 10° N. 12 miles to 12:54 o'clock (A. M. May 11th) where we stopped to melt some snow for drinking. The ice crossed to-day was 75 per cent. of it one or more years old. There was much soft snow everywhere and the body of the sled frequently dragged in it—this is another of the many times we have missed the toboggan-bottomed sled which Wilkins took ashore. The going to-day was fairly level. Crossed three leads of four-inch young ice, rotten because of the warm weather—this is dangerous work, but we have been on short rations for a week—the dogs are living on our skin clothes—so it is up to us to take a few chances. I shall never again willingly (and I can hardly be said to have done it willingly this time) be on the ice so late in the season. Had we been six days earlier we should have had frosty weather to Banks Island and should be there now. As it is, the issue seems doubtful, and Storkerson and Ole may prove right after all in thinking our enterprise dangerous.

"After a rest and making some drinking water, we started again at 3:15 A. M. and camped at 7:15, as it was getting too warm for the dogs to pull well and the snow was melting on our clothing and making us wet. Distance traveled, about 18 miles east 110° N.

"Yesterday we awoke to find the long siege of easterly wind over for the time. By 6 A. M. it was blowing from the northwest ten miles an hour, increasing by 8 A. M. to about northwest 15 miles. During the day the wind shifted to about west 10° south. In the evening thickly clouded in the southwest and some snow fell before midnight. Sun barely visible most of the day and the light very trying on the eyes. About 3 A. M. we saw from northeast to southeast what Storkerson and Ole think was a mirage of land. It looked through my glasses like clouds undulating around oval-topped mountains. Crossed two more leads over the same sort of rotten and sloppy four-inch ice. In one case the ice bent so badly under the sled that for a minute or two we expected it to break through, which might have proved fatal to all of us, although to give a certain margin of safety I always carry my rifle over my shoulder and about fifty rounds of ammunition. The west wind is doing brave work for us, closing the leads partly though it is not strong enough yet to have closed any of them completely. There is lateral motion discernible at all the leads. The floe west of each lead appears to be moving south about a foot in five minutes with reference to the floe next east of it. The floes are also approaching each other and crumbling a little on the edges. I suppose the pressure is so mild because there is a great deal of open water between us and Banks Island with nothing solid to obstruct the eastward motion of the ice."

I have quoted this entry in full, except for the meteorological observations, to show what sort of records I was in the habit of keeping. Many of the entries are a good deal more detailed, giving information of the kind of ice, or mention of signs of game, "pink snow" and other botanical and zoölogical phenomena. Full reproduction of such notes would be tedious in a book intended for general reading, although it is really these that constitute the larger part of the scientific information gained. This detailed information with the conclusions to be drawn from it is made part of a series of scientific reports on the work of the expedition published by the Canadian Government.*

By May 13th we had fed to the dogs several pairs of worn-out skin boots, the two grizzly bear skins off which we had used the hair for fuel, and some other bedding. We ourselves were on a ration of three-quarters of a pound of food per day, at which rate there remained enough for two or three days only. It seemed to me that this was about as close to the wind as we ought to sail, so after traveling eleven miles that day we stopped beside open water to watch for seals. During the first two hours we saw several and killed two. This was encouraging so far as it went, although our hopes had a severe blow through the prompt sinking of both as soon as they had been shot. Here was another of my theories that might have gone wrong. It is familiar knowledge that in the vicinity of land seals killed in winter will in most cases float, while if killed in the spring they sink. Common belief among the Eskimos and whalers was that they sink because in the spring the seals are not as fat as in winter. My view was that they sank probably because in the spring the rivers bring a large amount of fresh water to the ocean, thus reducing the salinity of the water near land. Everyone knows that eggs and potatoes will float in brine, and that in many of the salt lakes it is impossible for a bather to sink, while swimming in salt water is easier than in fresh. I had reasoned that, although seals when shot in the spring might sink near shore where the water was comparatively fresh, they would float if killed at distances remote from land where the water, at least up to the beginning of the summer thaws on the ice, would have the same degree of salinity in May as in February.

The sinking of the first two seals killed was a bit disconcerting, although we explained it by recalling that a certain small percentage of seals will sink at any season. There is no denying that after this experience we had a troubled day. At none of several leads that we passed did we dare to risk stopping, for fear any seals killed might sink, leaving nothing to pay us for time lost in the hunting.

The dogs had become noticeably thinner. Had they been Eskimo dogs all of them would have quit pulling or could have been driven only with the whip. But only one of these dogs was a quitter; the other five still pulled their best. The quitter was a little fatter than the others, for he had begun to save his strength as soon as he became hungry. No amount of whipping would make him pull an ounce. In circumstances such as these the conventional attitude towards a dog is that he ought to be killed, but we knew that Bones, as we called him, because he was usually so fat that his ribs and even his backbone were difficult to feel, was a good dog when well fed and would be useful again when we killed a seal for food. I admit a little resentment towards him, especially when I saw how well the others pulled who were leaner; still, I could never see why feeling should take the place of judgment, nor why I should kill a dog because he lacked character. Bones did, as a matter of fact, live to serve us many years. But we were careful never to take him again on a trip where emergencies of short rations were likely to arise.

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* For information regarding the scientific reports of the expedition, address Deputy Minister of Naval Service, Ottawa. Three octavo volumes are now ready. The entire series of reports will probably fill between twenty and thirty octavo volumes. It will doubtless be several years till the last volume is ready.

A depressed evening followed a depressed day and my diary has here about the gloomiest entry of the volume. Under the heading of "Traveling Seasons," I now read: "It is difficult and dangerous to be traveling out on the sea ice in this latitude of the Beaufort Sea after May first. If we should get strong easterly winds now, for instance, our chances of reaching Banks Island would be small, as the few seals here seem to sink and we are nearly out of food. It is a hard thing now to think back on the silly jealousies that made Storkerson's work of preparing for this ice trip stand still for two weeks till I got home—I expected to find everything ready at Martin Point so we could leave for the ice while the midwinter frosts held instead of when spring was upon us as it had to be, after we had done the work of preparation which Storkerson could easily have done earlier if he had had the proper assistance." It is usually so when things go badly. One thinks back to the perversities of human nature which can, if one keeps that point of view, be seen as the source of all one's evil fortune.

# CHAPTER XIX

## WE SECURE OUR FIRST SEAL

MAY 15th it had come to a shown-down. The leads were getting more numerous and we had great trouble in finding crossings. Evidences that the ice was drifting to the west were multiplying and it was certain that we could not get ashore in Banks Island until a westerly wind began to drive the ice east toward the land. When we came now to a lead we stopped and made up our minds we would not move again until we had a seal. During the first three or four hours two seals came up within two hundred yards of me and I killed both. And they sank.

Then followed an hour or two of waiting, at the end of which one came up about two hundred and fifty yards from the hummock where I was lying, although only a few yards from the edge of the lead. The sun was behind me and the light just right. Here the flat trajectory of a rifle that has a velocity of over 3,100 feet, as mine had, has the great advantage that one does not have to worry about estimating distances. Seals often show their shoulders out of the water as far as the region of the heart, but when there is danger of their sinking a body wound is undesirable. My bullet went through the brain, and the dead seal floated so high that I could see instantly he was safe. Storkerson was watching and his repeated shouts of "It floats!" would have delighted the hearts of the manufacturers of a certain kind of soap.

That evening the diary was as hopeful as it had been apprehensive the day before. "It is lucky we wrote woe and foreboding in our diaries yesterday. There is nothing of the sort to-day to write about. We are having the first full meal for over a week. No more equal divisions of small portions of food into rations."

As if for further encouragement we saw this day the first bear track in two weeks. A female with two cubs had been traveling south along one of the leads. For two or three days we had been seeing about one fox track per day, but for a week or two before that not more than one every three or four days. Our struggle to reach the land-fast ice of Banks Island was no less strenuous.

The first relaxation was a day of rest deliberately taken to feed up the dogs and to celebrate with feasts of fresh boiled seal meat our vindicated theory. But the day deliberately taken was followed by two days of idleness enforced.

On the feast day the sun was bright and warm, and instead of using our Burberry tent double as was our custom, we used only the outer cover so as to allow the sun to penetrate and warm up the interior. The Burberry in cold weather was perhaps not perfect but certainly the best tent that we know anything about. It was conical in shape but otherwise resembled an umbrella, in that five bamboo sticks corresponding to umbrella ribs were fastened at equal intervals to the tent cloth and joined at the top with hinges. These bamboo ribs were inside the outer cover and from them was suspended by strings an inner tent, also of Burberry cloth, giving an air space of an inch and a half or two inches between the cloths. This double tent when the temperature outdoors was at zero would be at least twenty degrees warmer inside than if we had used a single cover. As the difference in weight is only about four pounds, carrying a double tent is well worth while, especially as it has incidental advantages. Hoar frost will form on the inside of a single tent if the weather is near zero, and this not only makes the tent heavy but falls in the form of flakes upon the bedding at night and tends to make it wet. With two covers, hoar frost will not form on the inside one unless the temperature out of doors is considerably below zero. If a little frost does form between the tents this does little harm, for by beating the outside with a stick ninety per cent. can be shaken out when the tent is pulled down. Two further advantages are that it can be pitched by two or three men in a fraction of a minute, almost as quickly as an umbrella can be opened, and that once pitched the bamboo ribs keep it from flapping as badly as other tents do, just as a ribbed umbrella is kept from flapping. It will also stand any arctic gale if properly pitched. The only time ours ever blew down was in the gale that separated us from Wilkins and Castel, and that was because we had pitched it on a little patch of glare ice so that it slid bodily before the wind.

The day we rested we had used the single tent instead of the double, and the bright sunshine penetrated the one cloth so easily that during the day we became snowblind. This was something no one of us had dreamed could happen. We had all had touches at various times of snowblindness acquired out of doors, but the thought never occurred to us that our eyes might be affected in a tent. The attack was not severe, but it is true with snowblindness if it is true with anything that an ounce of prevention is worth a pound of cure. As soon as we realized what had happened we put up again the inner cover of the tent, spread some canvas over the outside to make it darker, and then put on our amber-colored glasses and sat or slept inside until our eyes were normal again.

Through great care of my eyes I have never in ten winters spent north of the arctic circle become completely snowblind, though one of my eyes has been frequently affected. When one eye is better than the other, as is the case with most people, the poorer eye is the one affected. The glare of the snow appears brighter to the eye of keener vision, and that eye is instinctively closed or shielded. When you have once begun to shield one eye, it becomes increasingly difficult to keep it open, for the reason that an eye which has been in darkness is blinded by a light which does not blind an eye that has been continually exposed to it. The whole strain of seeing thus falls upon the weaker eye and it accordingly is attacked first. Those who become snowblind in both eyes simultaneously have either used their will power to keep both eyes open or else have eyes of nearly equal quality.

From this it might be inferred that snowblindness is most likely to occur on days of clear sky and bright sun. This is not the case. The days most dangerous are those when the clouds are thick enough to hide the sun but not heavy enough to produce what we call heavily overcast or gloomy weather. Then light is so evenly diffused that no shadows can be seen anywhere. The sea ice is not level; if there are no actual snags of broken ice sticking up, there are at least snowdrifts. When the sun is shining in a clear sky all these unevennesses are easily seen, because shadows lie in the low places, but on a day of diffused light everything looks level, as was observed in respect to travel under cloudy skies. You may collide against a snow-covered ice cake as high as your waistline and, far more easily, you may trip over snowdrifts a foot or so in height, because without the assistance of shadows everything that is pure white seems to be perfectly level. Knowing the danger, your eyes are continually strained for its detection. Here amber-colored glasses are of use, for unevennesses imperceptible to the bare eye can sometimes be seen by the aid of these "ray filters," as they are called in photography. This is one of the advantages of the amber glass over all other forms of protection against snowblindness. Glass of "chlorophyll green" is excellent when the sun is shining, and seems to be easier on the eye than dark or so-called "smoke glasses," which are the poorest of all. Almost any color will do when the sun is out, but in cloudy weather both the chlorophyll green and the smoked glasses cut out too much light and interfere so with clearness of vision that they are a distinct handicap as compared with the amber glass.

When through the use of poor glasses or none at all your eyes are stricken, the symptoms do not develop at the time of exposure. It may be after a long day's march that when you enter the tent or snowhouse in the evening your eyes feel as if there were small grains of sand in them. Such things as tobacco smoke or slight fumes from a poorly-trimmed lamp will make them water excessively. Gradually you begin to feel more sand in them and they become uncomfortable and sore, but it will be towards morning before shooting pains begin. These pains resemble those of earache or toothache and are said by persons who have had severe cases to be the most intense they ever experienced.

One feature of snowblindness is that each attack predisposes to another. People who have never been in snow countries are likely to remain immune and not suffer until the eyes have been excessively exposed, but people such as the Eskimos who are subject to the predisposing conditions every year are very readily affected. Some of them have a sort of fatalistic idea that snowblindess is inevitable and for that reason do not take enough precautions, although they nearly always take some precautions. I have known the severest cases of snowblindness chiefly among Eskimos. Men whom I have reason to consider as stoical as the ordinary lie moaning in bed with a skin or blanket over their heads, sleepless for as much as twenty-four hours. The period of considerable pain seldom extends over more than three days if one is in a darkened room or wears black or amber glasses. After complete recovery a second attack is not likely to come in less than a week, no matter how the eyes are exposed, but careless persons will have attacks every week or ten days.*

Keeping the eye on some dark object is a valuable preventive. On some trips we have had only one pair of amber glasses which have been used by the man who goes ahead and picks trail, for he alone has to use his eyes continually upon the white surface. The men who walk at the sleds to prevent them from upsetting are able to keep their eyes on its dark cover or upon the dogs.

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*I have read a novel where the plot hinges on two things: (1) that a snowblind person is temporarily stone blind; and (2) that when you have recovered from snowblindness you can still pretend to be snowblind. The first premise is ridiculous and the second untenable. A snowblind person is not blind in any such sense as is required by the plot of this novel. During severe snowblindness the tears flow as rapidly as in violent weeping. This condition is difficult to simulate when you are getting better. Further, in the movie made from the story no attempt is made by the snowblind actress to simulate tears while she is supposed to be pretending to be snowblind.

Another preventive is the Eskimo type of wooden protectors. This may be of a variety of designs, but the essential feature is always the same. The light is admitted to the eye through a narrow slit. The disadvantage is that you have only a limited field of vision—you cannot without stooping forward see what is immediately at your feet. For picking trail you must keep your eyes well up, so as to see that portion of the road which is several yards in advance, and when you do this you are liable to stumble, not having within your field of vision the unevennesses closer at hand. These Eskimo goggles have the advantage over regular goggles or spectacles that glass, when it is kept near the eye, will hoarfrost from eye moisture and from the moisture of the face, especially if one perspires. This frosting is not a serious annoyance on a windy day, especially if one keeps the face sidewise to the wind, but on a calm, frosty day the glasses keep frosting continually and if one travels fast enough or works hard enough to perspire they cannot be worn at all.

It has always been my plan to remain in camp when any one was snowblind, both because I realized the intense suffering of traveling under such conditions and because recovery is always quicker under proper care. But as we lost most of our amber glasses on the *Karluk* and never afterwards had enough to go around, we lost in five years several weeks of good traveling time through snowblindness.

When we resumed travel on May 18th we saw seals in every lead we passed. It almost seemed as if they had been keeping out of sight to worry us, for now they were as numerous as I have ever seen them in any waters.

A minor misfortune to reckon with was Ole's rather too cautious temperament. He was as optimistic as any one when there was real need, but now when seals were all about us and when I thought that with so many in one lead there were pretty sure to be some in the next, he would remind us how we had traveled for days without seeing seals and how we might get into another such district at any time. Whenever a seal appeared particularly close or in a position easy to approach, Ole used to say, "I think we'd better get that one and make sure of him." We lost many an hour in killing and picking up a seal, and presently found ourselves hauling a huge load almost as heavy as our load had been when the support party left us. Ole kept pointing out what a comfortable thing it was to know we had plenty, and volunteered to pull on the sled to help the team along. Surely if he who works has a right to eat, Ole had this right, for he was never lazy and seldom tired. Still, looking back now, we are all agreed that had it not been for Ole's frequent "We'd better get that one and make sure of him," we should have been able to make better progress. It is possible, doubtless, to have an excess of faith, but generally speaking he is the best ice traveler under our system who is the greatest optimist.

Until the kerosene gave out cooking had been done in the tent, for our primus stove never gave any trouble. Afterwards for a few days we had cooked outside, burning grizzly bear or caribou hair in an improvised tin stove. When we began to kill seals we used for some days an Eskimo-style seal-oil lamp, improvised from a frying pan. But I was the only member of the party who was used to the management of this cooking apparatus, and the others had difficulty in keeping the wicks trimmed, with the result that a lot of smoke escaped into the tent and lampblack got all over the cooking pots, almost insulating them and making it difficult to bring the food to a boil. The indoors cooking being a nuisance, especially now that heat was not necessary in camp, Storkerson undertook to rig an outdoors cooking arrangement which proved satisfactory and was used on all our later trips. Intending to make a "blubber stove" eventually, we had been carrying our six gallons of kerosene in a galvanized iron tank, the sides and bottom of which were clinched as well as soldered so that it could not come to pieces upon application of heat. To have them suitable for blubber stoves we make these iron tanks cylindrical with a diameter a little larger than the largest of our aluminum cooking pots and a height of about fifteen inches. When the contents have been used the top is removed and a draft hole is cut near the bottom; then half-way up the stove we run two or three heavy wires across for the cooking pot to stand on.

In burning seal oil or blubber, as in burning tallow, you must have a wick. Once I considered that asbestos might serve, since it could be used over and over again, but it would probably not be suitable, for the fibers would become so clogged with the incombustible residue of oil that its usefulness as a wick would be destroyed. Anyway, there is a simpler method. After our meals we save the clean-picked bones. When next the fire is to be built we use a little piece of rag for kindling, not necessarily more than an inch square, soaked in oil and put on the bottom of the stove. On top of it we make a little heap of the bones and on top of the heap we lay several strips of blubber, resembling so many strips of fat bacon. A match is touched to the rag and it burns like the wick of a candle, with the flame playing up between the bones and striking the blubber, which promptly begins to try out so that the oil drips down between the bones, forming a film on their outside. Upon sufficient heating this film flares up, and thereafter your fire burns with a furious heat so long as a strip of blubber is placed upon it. You now stand your cooking pot, filled with meat and water, upon the cross wires within the stove six or eight inches above the bottom. The flame first strikes the bottom of the pot and then spreads and comes up all around it, since the diameter of the stove is an inch or two larger than that of the pot. Application of heat to the bottom and sides of the pot at one time brings it to a boil as quickly as would the largest wood fire in a forest.

The only disadvantage of this method of cooking is that the smoke of burning seal oil is thick and black and exceedingly sticky. It is, in fact, the best quality of lampblack, and clings to everything. We are always careful not to have the smoke strike the tent, but now and then a dog, where it is tied, happens to be in the path of the smoke, with the result that any white spots there may be on his coat soon become as dark as the rest of him. One of our almost white dogs was nearly as dark as the blackest by the time we got ashore in Banks Island.

Although I had commonly done the cooking in the tent, whether with primus stove or seal oil lamp, either Storkerson or Ole was the cook after the blubber stove had been devised. Storkerson when once his fire was started used to stand aside and keep out of the smoke, but Ole was more solicitous and hovered about, so there is no exaggeration in saying that, although he is naturally a light Norwegian type of blond, he was in color within two weeks something between a mulatto and a full-blooded negro.

From this point on we all enjoyed our journey as we had not done before. I never could see anything very attractive and certainly nothing particularly romantic in the portable-boarding-house method of arctic travel. If you have no hope of any food beyond that in your sled, your conscience worries you every time you eat a square meal. In fact, if you are of the historic, heroic type you never allow yourself a square meal, and make stern memoranda in your diary about the member of your party who takes a nibble between hours or who eats more than his share. Some explorers have gone so far as to shoot members of their party who have infringed on the rations, and this with the full approval of governments at home and of lay readers of their narratives. I know a case where a lifelong friendship turned into enmity in a night because somebody got up in the dark and ate a quarter of a pound of chocolate. We never felt any resentment towards each other because of the quantities we used to eat, for it was always our understanding that when the chocolate and rice and other things were gone we should begin to live on seals, and it was merely a question of a few days sooner or later, anyway, when that time would come. It had come now, and he who had been free to eat chocolate when he listed was doubly welcome to boiled seal flipper or frozen liver or any other delicacy the sea afforded.

Really we had for those ten days of voluntary rations been backsliders from our own doctrine, of which we have since been more faithful followers: "Do not let worry over to-morrow's breakfast interfere with your appetite at dinner. The friendly Arctic will provide."

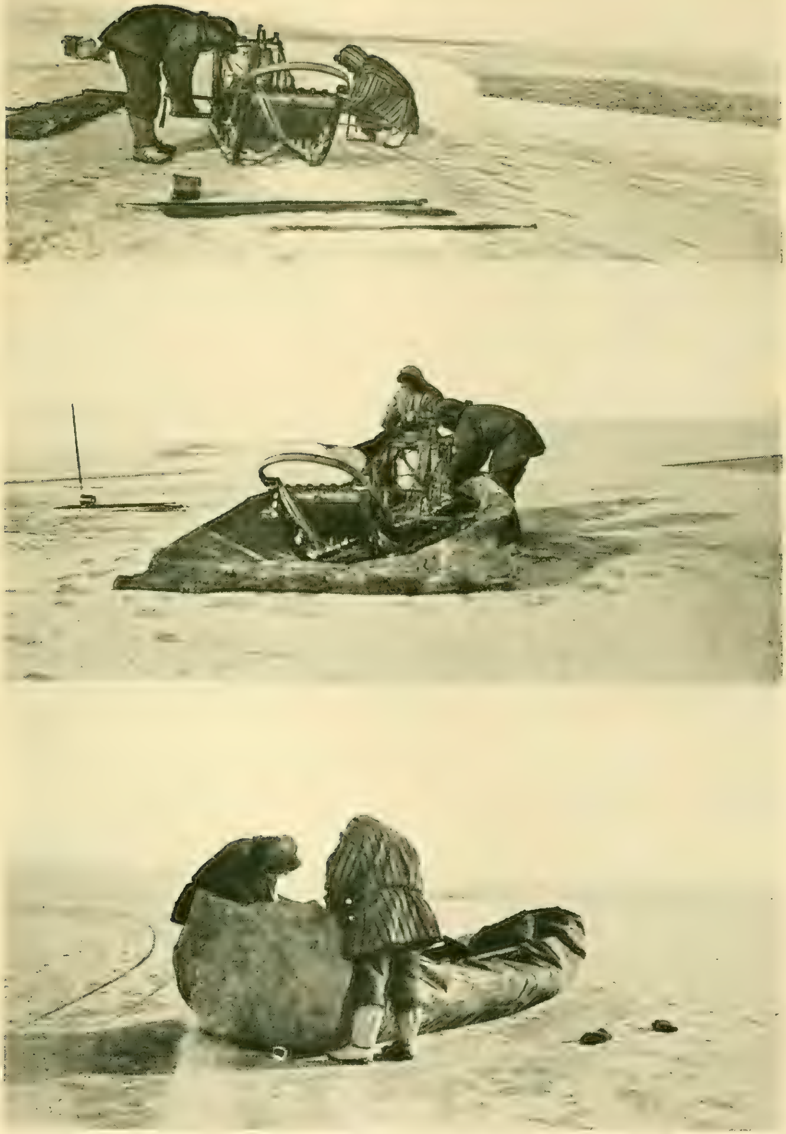
Lest memory seem to have spread a rosy haze over events that are five years past, I set down my diary entry of May 19, 1914. It shows the relaxation that came upon us when we were definitely through with the traditional method of arctic exploration, used as a sort of introduction to our trip and abandoned for the method of faith and reliance on nature which we have made our own.

"Old times have come again and we are traveling in what I consider comfort. I don't like the pemmican method of exploration, though I concede as readily as any one its merits in its place. Where, as inland in the Antarctic, there is no game, it is the only method. But with it you are continually worrying whether the rations will last to your destination, and there is nothing more to be hoped for than what you have with you at the start. This is the unsupplemented pemmican method as used by most European explorers. But with a reasonable load of pemmican at the start (cereals and malted milk are better), and with guns and skill, you can be sure in most latitudes of getting farther than your provisions reach—how much farther is always a matter of hope and anticipation. It is thus a game as well as work. Science still has all her power over you, and so does the desire for approbation of the crowd or of the elect, and beyond that is the incentive of pure sport—no sordid desire to best a rival but merely eagerness to show what you and your method can do. And then there is the blessing of not being 'on rations.' For nearly two weeks we were on rations, the first experience of the kind I have had when there was something on the sled to eat. In the past I have kept men and dogs on full rations as long as there was one day's grub ahead, and I wish I had done it this time. I believe we should have been here and perhaps beyond this place before the spell of easterly wind which made the leads that are giving us so much trouble now, had we kept our dogs at full strength by keeping them on full rations, feeding them in five days what we did feed them in ten, for they would probably have gone from five to ten more miles per day. Now the dogs are so poor it will take a week of slow travel and good feeding to get them back to half their normal spirits. It would take about two weeks of approximate rest to get them in real form again. They will soon improve beyond what they have been, however. Even yesterday they pulled a bit better.

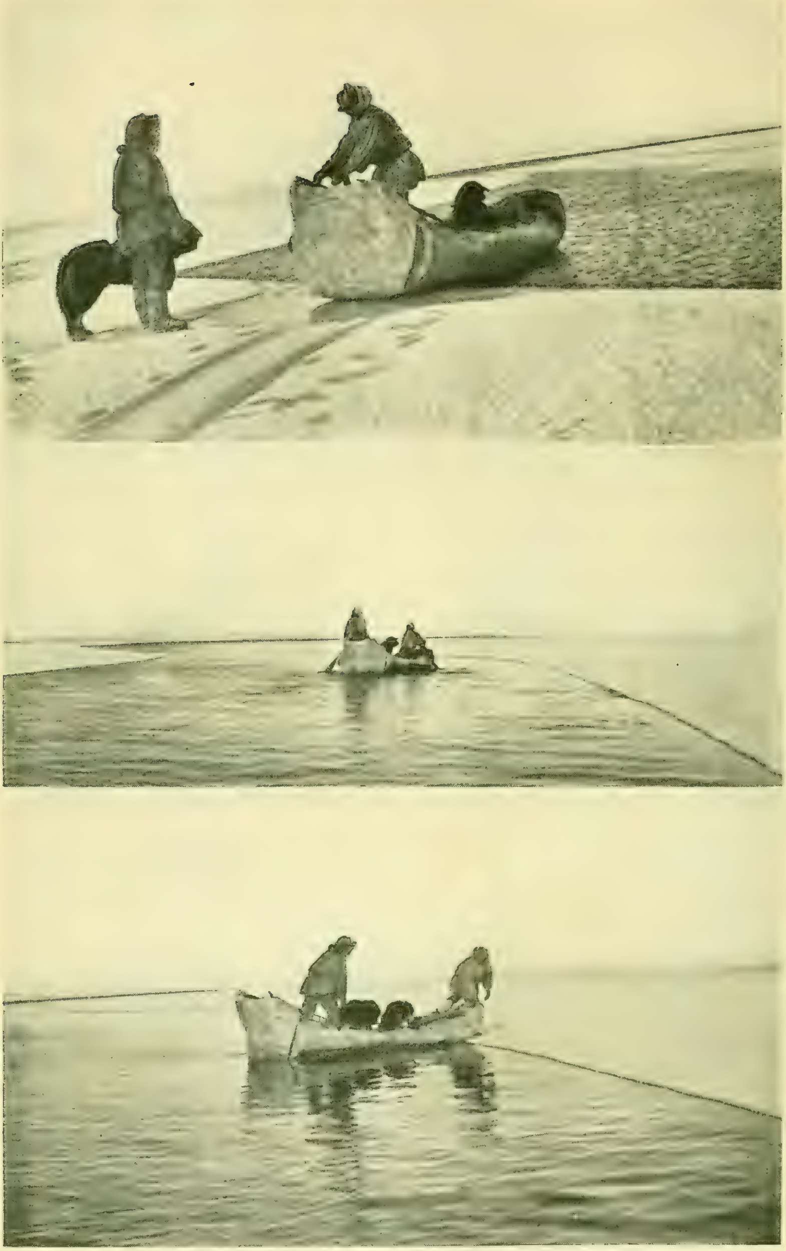
"As for us, we are taking solid comfort, with no worries for the morrow. If it takes us a month to get ashore, we shall feed well the whole time as we have done to-day—a feast on boiled seal liver, tripe, flippers and blubber. All of us agreed we enjoyed it more than any breakfast we have had this winter. We are staying in camp to-day again to give the dogs a chance to rest and feed up a little. The weather also is not agreeable. There is the sort of haze that might give us snowblindness and which makes it very difficult to pick a trail. With our dogs weakened as they are now, it would be foolish to flounder ahead through rough going when there might be a few yards to one side or the other of us smooth ice which we could see if the sun were out. So we are resting to-day, hoping for sunshine and good luck to-morrow."

May 20th did prove clear as we had hoped, but we had trouble with open water. In the afternoon a lead opened which was about a quarter of a mile wide at the narrowest place and ran at right angles to our course, so that we were sure to lose a good deal of ground by following it for a crossing. Furthermore, it seemed to be widening and the crossing place might not have been discoverable.

This was a good time to try our sledboat. Perhaps it seems surprising that we had not tried it before, for on many occasions there had been as much as a day's delay by open water. One reason why we suffered these delays was that on days of good luck we, and especially the dogs, worked so hard that coming upon open water was an excuse for resting, even more welcome than valid. Rest meant not our rest alone, but recuperation for the dogs, so that a day later when the lead had either frozen or closed they were able to pull faster and farther. Another reason was that the leads were



Rigging the Sledboat.



Launching the Sledboat.
Crossing a Lead.
Landing.

seldom actually open water. Usually they had been formed a few hours or even a day before and were covered by young ice which, although not strong enough to support a sled, was thick enough so that it would have had to be broken before a boat could be forced through. Forcing a canvas boat through young ice always chafes it along the water line, and although our raft cover was good quality No. 2 canvas, we felt that a dozen crossings through young ice would probably wear a hole in it. But now the weather was so warm that even if leads were several hours old, the sun had prevented the formation of ice and they were as crossable as an ordinary river in summertime.

Before we came to this particular lead we had already made up our minds that we would use the sledboat at the next one. As a matter of interest I made note of how long it took us to use the boat for the first time. We promptly unloaded the sled, spread the cover on the ground and placed the sled upon the middle of it. We took two sticks about six feet long, carried for the purpose, and lashed one crosswise of the sled near the front end and the other near the back end. Between the ends of these sticks we lashed one of our skis on each side. This made a frame which gave the boat a beam of six feet instead of only about twenty-five inches, which was the width of our fourteen-foot long sled. This frame constructed, the tarpaulin was lashed up on the sides of the sled, and the sled had become a boat which would carry about a thousand pounds, enabling us to take our load across in two trips, carrying each time three of the dogs. It took exactly two hours from the time we stopped at the lead, a quarter of a mile wide, until we had the sled loaded and were on our way again on the other side.

The advantage of this system of crossing a lead is manifest to any one, but especially to those who have read, for instance, of Nansen's boats for crossing open water. These were of fragile canvas, and as he carried them on the sleds with the canvas stretched tightly over their frames, they were easily punctured when the sleds happened to upset or collide with broken ice. Nansen accordingly found that besides the disadvantage of the great care they required, they were so badly damaged and their covers so full of holes when open water was reached that it took several days of repairs to make them seaworthy.

When we were through using our tarpaulin, which was about eighteen feet long and ten feet wide, we gave it a beating to remove any clinging ice. Sometimes at low temperatures a quarter of an inch or more of ice had formed on the canvas while we were crossing, but as all the interstices between the fibers are filled with lard the tarpaulin cannot possibly become water-soaked. This also gives a surface to which ice cannot adhere tenaciously, but can be removed by rolling the tarpaulin about, walking on it or beating it with a stick. The tarpaulin with its water-proofing of lard weighed about forty pounds, and I don't believe there was any time when this weight was increased as much as five pounds by the ice that still adhered to it when we rolled it into a bundle and put it in the sled. The bundle resembled a bolt of flannel as you see it in a dry goods store and was loaded in the sled's bottom, conveniently and with no danger of injury during travel.

Of course it is quite true that the sledboat is not as seaworthy as Nansen's kayaks. Still, Storkerson and Ole, who were both good sailors, once made me the serious proposition that we attempt to cross in it from Nelson Head to Cape Parry, a distance of sixty miles. I don't think this would have been a sensible thing to do, although it might have been accomplished. The great difficulty was that from the craft's shape it was not easy to paddle.

A young seal was our food on May 20th. The younger the seal the more delectable the meat, and partly because the meat was good and partly because everything was going so well that we were in high spirits, we overdid the feast and on May 21st we did not travel. It may be a disgrace of a sort to confess to such gluttony, but at least it is no reflection on our method of provisioning to say that this was not the only occasion on that journey nor the only one of our journeys when one man or another was indisposed through overeating. Incidentally it shows how well we liked our diet. It does take some time to get used to a meat diet, and Ole was not as yet completely broken in. Storkerson and I that day were the patients, but it wasn't many days before Ole was in equal plight.

During this night we were awakened by the dogs barking. There might have been a bear in the vicinity, but none was visible. The dogs, too, were not watching the ice but were looking out towards an open lead. After we had gone back into the tent they began to bark again. This time their barking was explained, for we heard the noise which had surprised and worried them, and which now surprised and interested us though it was by no means a source of worry. It was the blowing of whales. We ran out and saw a school of beluga whales passing, northward-bound along the lead. During the next two or three weeks we saw thousands of them. They were usually traveling north or east according to the way the leads were running, but on rare occasions they were traveling in other directions. Sometimes the leads were open, but as the frost was still heavy at night the whales occasionally found themselves in leads covered with young ice. Then it was interesting to see the six or eight-inch ice bulge and break as they struck it with the hump of their backs. A moment after the noise of breaking ice would come the hiss of the spouting whale and a column of spray.

Although some of the leads were narrow enough to compel the whales to pass within a few yards of us, we did not try to kill them because they sink instantly and it is no use unless you have a harpoon. On this our first sea journey we should doubtless have carried a harpoon had we expected to encounter whales. Now we have complete faith in the seal, and I do not think it likely I shall ever take along any apparatus for killing or securing animals other than bears and seals. Undoubtedly there are fish in the water, and for scientific reasons it would be of interest to carry some sort of gear for getting them, but I would never bother about fishing for food when seals are to be had. You must have the seals for fuel, anyway, and you might as well get from them your food also. The seal is indeed the best all-around animal of the North. Their skins furnish us with boots, with boats, and with containers for oil. The blubber is food for men and dogs, it supplies light in winter and heat for house and cooking, and the intestines provide waterproof clothing and translucent material for windows.

The temporarily favorable westerly winds came to an end May 22nd and another siege of easterly winds began. But for two days we had good luck. Undoubtedly the ice was all moving west, but the traveling floes pressed upon each other so closely that we always found a corner by which to cross to the next one east.

# CHAPTER XX

## MAROONED ON AN ISLAND OF ICE

IT was without any premonition of what was about to happen that on May 24th, after we had gone two miles and a half, we stopped at a lead only about a quarter of a mile wide. To cross was impossible because of a strong easterly wind that covered even this narrow water with whitecaps, but such leads usually close and open as the floes crowd and jostle in their drift before the wind. No such thing was destined now to happen. Within the next few hours the lead had widened to five miles and by next day we had no idea how wide it was, for the ice to the east was no longer visible and the waves were rolling in and beating against our floe as if there were nothing between us and Banks Island but an open ocean. Later the lead did narrow to about five miles again, but day after day the young ice refused to get hard enough to bear up the sleds, and nevertheless was so thick that it would have chafed a hole in the canvas of our sledboat long before we could have made the other side.

We were now a sort of Robinson Crusoe party on a moving island of ice. I explored it the second day and found it to be four or five miles square, but on all sides separated from adjacent floes by uncrossable leads of ice and mush. Our island was substantial—from the height of the hummocks above sea level I judged that many parts of it were over fifty feet thick—so we had as safe a camp site as is possible on sea ice, but there were two things to concern us. One was that if the easterly wind continued we should fail to meet the *Star* at our rendezvous at the northwest corner of Banks Island; the other was the problem of food and fuel. If we were forced to spend the summer on the ice, we should have to spend the winter, too. Could we during the good hunting light store up enough meat and blubber to last during the winter darkness? And if enough was secured, we might not be able to keep the stores safe through the winter if in some night of darkness and blizzard our ice island should split in the middle of our camp, and each part start in a different direction if it did not tip on edge, spilling our depots into the water. This was a spice of prospective danger which kept us from feeling the time monotonous.

So soon as we felt certain our marooning would be protracted, we commenced killing seals. There were a great many about, but the mush ice in the leads made it difficult to secure them and after several days of effort we had only three or four safe on the ice beside us. Then suddenly the food question was answered by the walking into camp of the first bear we had seen since leaving the neighborhood of Alaska.

It was about noon, and Ole and I were asleep while Storkerson was standing watch. He was beginning to cook, preparatory to calling me for my watch, when the dogs started to bark at a diffident young bear that was hovering about and sniffing the camp from one or two hundred yards to leeward. By the time I had my eyes opened and my rifle in hand he had begun a circumspect approach. We waited till he was within twenty-five yards and then I shot him about three inches from the heart. His stomach contained nothing, so he could not have been faring very well the last day or so, but before that his hunt must have been successful for he was as fat as is desirable for food.

Questions frequently are put to me as to whether caribou meat or musk-ox meat or bear meat or seal meat is good eating, and then I struggle against impatience, for underlying the query is a fundamental misunderstanding of human tastes and prejudice in food. A rule with no more exceptions than ordinary rules is that people like the sort of food to which they are accustomed. An American will tell you that he can eat white bread every day but that he gets tired of rice if he eats it more than once or twice a month, while a Chinaman may think that rice is an excellent food for every day but that wheat bread soon palls. An Englishman will tell you that beef is the best meat in the world, while in Iceland or in Thibet you will learn that beef is all right now and then, but mutton is the only meat of which you never tire. If a man is brought up on the west coast of Norway or on Prince Edward Island, he thinks that herring and potatoes make the best of all staple diets, while an Iowa farmer likes potatoes well enough but would balk at the herring.

Polar bear is a rare item in the diet of most Eskimo groups that I have known, and accordingly nearly all of them prefer some other form of meat. But the Eskimos of Prince Albert Sound who on their winter hunts in Banks Island live for several months each year nearly exclusively on polar-bear meat are very fond of it.

As for the members of my traveling parties, we have never become really used to bear meat, although I have myself killed several dozen bears and been present at the killing of many dozen others. Bear has one fundamental defect that has nothing to do with the taste or toughness but lies in the stringy nature of the meat of any but the youngest. The fibers have a way of getting between the teeth and sticking there, making the gums sore, so that after a week or two of bear meat, chewing becomes painful. This applies to the cooked meat, not to the raw. Cooking increases the toughness and brings out the stringiness. I have never eaten any raw meat that was noticeably tough or stringy. Chewing half-frozen meat is like chewing hard ice-cream, while eating unfrozen raw meat cut in small pieces is like eating raw oysters.

A second bear came into camp about ten hours after the first. His entry was a good deal more dramatic. As usual, our six dogs were tied near the tent, strung out at intervals of about six feet along the tie line that was fastened at both ends to chunks of ice. All of us were about a quarter of a mile away, Storkerson and Ole in the sled boat, paddling around about fifty yards from the solid ice, and I with my glasses standing on a hummock directing them where to find a dead seal that was partly hidden by some moving mush ice. My back was towards the camp but Storkerson, who was in the stern and faced it, noticed a bear about a hundred yards from the dogs, advancing towards them at a steady walk. I started for camp on a run, and just then the bear caught sight of the dogs and began to stalk them. They were all lying down but with their heads up looking in our direction, for the wind had brought them the smell of the killed seals. I foolishly shouted to them and this only fastened their attention more strongly on me. They were still oblivious of the bear, which had slunk to one side to be hidden by an ice hummock, and with legs bent and almost sliding on his belly was slowly moving towards them. The shielding hummock was about twenty yards from the dogs, and I knew that when he got that close he would make a dash from cover, yet without any suspicion that his attack was aimed at a dog, not at a seal. When a bear pounces on a seal he gets him between his claws first but bites him almost simultaneously. This action would be so instinctive that by the time he realized by smell or otherwise that he was not dealing with a seal the dog would be dead or maimed.

The bear got to the hummock, and half stood up as he rounded it preparatory to making his dash. I was then about a hundred and twenty-five yards away and was badly out of breath, after a run through soft snow. Although I threw myself down and rested my elbow on the ice, I was so winded it was mainly by luck my bullet struck two inches back of the heart. It must have been chiefly the shock to his spine that made the animal crumple almost magically, his four legs doubling under him and his head resting on the ice. I could see that he was alive, for his eyes followed my movements. He was about ten yards from the water, and it is the nature of bears when wounded to try to get into water. My first thought was to prevent this and I foolishly took a position between him and the open lead.

It seems to me now that the bear used almost human judgment in what he did. Evidently he must have been recovering from the shock to his spine, though he was bleeding rapidly and would have died from loss of blood in five or ten minutes. But what happened was all comprised in less than two minutes. Just as I might have done in his place with only his resources, he kept his eyes fixed on me and made not the slightest motion for about a minute. In falling he must have sunk slightly backward, for his hind feet were forward under him in just the feline position from which a cat or lion may leap. Suddenly and without any preparation he launched himself directly towards me. I had my rifle pointed and it must have been almost automatically that I pulled the trigger. Had not the bullet pierced the brain I am afraid it would have gone badly with me, for as it was he covered about three and a half of the five yards between us, and collapsed so near that blood spattered my boots.

This incident increased a good deal my respect for the intelligence of polar bears, which has been growing with every encounter. Their unwary approach to a party of men and dogs must not be set down against them as lack of intelligence. They simply have not the data upon which to reason, for they never before have encountered any dangerous animal upon the ice. We estimated the age of this bear at about four years, although I have no accurate knowledge upon which to calculate the age of bears. He was not fat but weighed seven or eight hundred pounds, the meat being about the equivalent of that of four seals. It seemed likely that bears would continue to come and evidently it was an economy of ammunition to kill them for meat, but their lack of fat made it necessary to continue seal hunting for the sake of the blubber.

Forced wintering on the ice would mean that blubber would be more necessary than meat, for we would have to depend upon it for light and fuel as well as food. Seal blubber at any temperature, even at thirty or forty below zero, will lessen in weight day by day, the oil trickling out perceptibly. It is therefore necessary to preserve blubber in bags. This we do by skinning the seal through the mouth, or "casing" his skin, to use the language of the furrier. This means that the skinning is commenced at the lips. The hide is turned back and, as the skinning proceeds, pulled backwards over the head and then back over the neck and body as one might turn a sock inside out. When the skinning is done in this fashion, there are no openings in the bag except the natural ones. The flippers have none, for the bones are dismembered at what correspond to the wrist and ankle joints, leaving the flipper unskinned. The natural openings are closed by tying them up like the mouth of a bag. This makes the *pok* which we use for a seal-oil container and which will hold the fat of about four seals. The same sort of bag may also be inflated by blowing and then forms a float with a buoyancy of two or three hundred pounds. Occasionally instead of using our canvas to convert the sled into a boat we fasten three or four of these inflated *poks* to the sides of the sled, making a sort of life raft. This is an Eskimo method, satisfactory in warm weather but not in winter, because the water which splashes over the sled turns into an ice coating very difficult to remove.

While our seal hunting for blubber continued, the bears kept coming into camp. The third one arrived May 31st and in a peculiar way. It was three or four o'clock in the morning, the other men were asleep and I with my six-power glasses was standing on a hummock near the camp watching the ice of the lead, counting seals as they came up at distances beyond gunshot and also watching for whales, the northward passage of which was intermittent. The lead now was several miles wide and covered with young ice not strong enough to walk upon, except near the middle where some of it had telescoped, making it double thickness. As I could see later by careful study of this ice with my glasses, the bear must have been proceeding north along the middle of the lead. Possibly he had seen the camp or been attracted towards it by some noise. I do not remember having made any sound, but he may have heard the dogs—they had been tied up so long and were in such high spirits that they were developing an inclination to fight which, because of their chains, could only be translated into snarling and barking.

The visitor's manner of coming was peculiar. The young ice was not strong enough to bear his weight but was too tough to allow comfortable swimming on the surface. He must have been coming up from one of his dives when I first saw him, for he was in a hole with his forelegs resting upon the ice on either side of him and with his shoulders out of water. He seemed to be craning his neck to look as far as possible, but apparently the ice would bear no more than the forward third of his body. After a rest of a minute or so and a good look around, he proceeded with a sort of overhand stroke, swimming along the surface and breaking the ice. In five or eight yards he became tired of this, made a dive, and in a few seconds came up through the ice about twenty yards nearer. Here he rested as before, lifting himself and craning his neck as high as the strength of the ice allowed, then swam forward a few yards and dove again. This manner of locomotion was so interesting that I called Storkerson and Ole.

The bear made a landing about fifty yards from the camp and just at that moment got the scent of it. He stood and sniffed and then came towards us at a leisurely walk. The dogs had seen him and were furiously barking and tugging at their chains. All this outcry and commotion seemed to be of but mild interest, for the bear gave them only a casual glance now and then as he walked about five or ten yards from them straight for the stored seal meat. I killed him with one shot when he was in a convenient place for skinning. He was a fat bear, the largest we had secured so far, a good deal over a thousand pounds.

The fourth bear came while we were skinning number three. He was a yearling and very timid. We had plenty of meat and I decided I would not shoot unless he came straight into camp. After studying us for five or ten minutes and sniffing the fresh smell of the bear we were skinning, he evidently concluded that a closer acquaintance would be undesirable and started off at a slow run which must have been intended to be a dignified retreat, but which showed that he was really scared.

The fifth bear came on June 3rd, a visit more exciting than any of the others. I was away on a walk about our island, examining all sides to see if there were any chance to get off. Our dogs are tied commonly by making with picks a sort of toggle in the ice through which we pass the end of the tie line. Although ice is readily broken with a sharp blow, one of these toggles is unbelievably strong if subjected only to a steady strain. In the whaling at Point Barrow, for instance, half a dozen ice toggles, each no more than five inches in diameter, will stand the strain of hauling a sixty- or seventy-foot whale out of a lead on to the ice. But in this case thawing had weakened them, and when the dogs made a concerted rush towards the bear, putting their weights simultaneously against the toggles, they broke. Tied together as the dogs were, the bear would have had them at a great disadvantage had he stopped to wait for them, but as soon as he saw them coming he fled, making for the water as a bear always will when he thinks himself in danger. About five yards from shore the young ice broke under him. He did not dive, but started trying to struggle up on the ice, breaking some more of it. The dogs rushed up but had the sense not to go in the water.

Storkerson and Ole, out of the tent by this time, saw the great danger to the dogs, each one of which was of priceless value to us. They accordingly began to shoot, although instructions were that no bear was to be killed in the water, as the meat would have been difficult to retrieve. Only the head of the bear was showing much of the time, and partly because of this and partly because of excitement, it took a fusillade to kill him that used up more ammunition than we could afford. It was justifiable, however, to do anything that increased the safety of our dogs.

When this shooting began I was about half a mile from camp. As one shot after another rang out I grew more and more worried. My companions knew as well as I did that our lives and our success might depend upon the careful husbanding of ammunition. Yet there was Ole standing up and wastefully shooting from the shoulder like a cowboy firing at Indians in a movie. My momentary anger at this extravagance changed quickly to relief when I got home and saw what a narrow escape the dogs had had.

Since leaving the shallow waters in the vicinity of the coast of Alaska we had been taking a sounding once every forty or fifty miles and invariably getting one result—1,386 meters with no bottom. This was the full length of our line—about four-fifths of a mile—and it was a continual source of grief to me that the accidental breaking of the wire in earlier soundings had left us unable to reach bottom. It had been a theory with many geographers that the ocean north of Alaska was shallow, its bottom an extension of the continental shelf with a consequent average depth of under 400 meters and a concomitant probability of numerous islands studding this shallow sea. But instead of the "continental shelf" we had below us "oceanic depths," and at least one ground for expecting to find new lands in this unknown sea was gone.

At the lead which stopped us we had not taken a sounding immediately, for we had not traveled far from our last sounding, but on the second day we sounded and got bottom for the first time

Sealing Waters.

Fair Wind and Level Ice.

Tent and Snow "Sastrugi" after a Blizzard.

The Lead that Stopped Us.

at 736 meters. Earlier in the trip it had been our expectation that if our line ever got bottom it would mean the approach to and discovery of an unknown land. But recently we had been traveling towards Banks Island, and this sounding merely confirmed the evidence of our sextant that we were only forty or fifty miles from the shore of a land that was known, although uninhabited and little explored. As the wind was steady and strong from the east and our ice drifting westward, it is probable that had we sounded upon our arrival the day before we should have had bottom at a much shallower depth.

Daily sextant observations showed that our drift to westward away from Banks Island was continuous day after day although not uniform, and the same was indicated by soundings. May 27th we had 962 meters and on the 28th 1,142. On the 29th we were again in water too deep for reaching bottom with our line.

Spring was now full upon us. Thaw water was trickling down the sunny side of the ice hummocks and bird life began to increase. Ivory gulls appeared on the 10th of May and by the 25th had become both numerous and friendly. They used to flutter about our camps and walk around within a dozen feet of us with little concern. I suppose the real reason for their friendliness was the meat, but still they frequently visited without even taking a nibble, though they were quite welcome to do so, for shortage of food was not going to be one of our serious problems. Barrow-gulls arrived May 24th and so did the common tern. Whales kept traveling by in dozens or hundreds, and the dogs had become so used to their blowing that they no longer barked or gave a sign of attention. Small marine life was abundant in the water. The gulls evidently lived sumptuously on it, and the seals swam about on the surface feeding lazily. In their stomachs we found both shrimps and small "worms" half an inch long. These shrimps and worms were so abundant in the surface layers of the water that had we been in any such straits as the Greely party when they attempted to live on shrimps, we could have done so with little trouble.

By June we had become almost reconciled to our encampment on the ice. We had begun to think that we should have to spend our entire summer there and, of course, where you spend the summer it is advisable to spend the winter, for your gathered store of food and fuel will take you safely through the months of darkness if you camp by it. If you begin traveling in the autumn you have to leave most of your supplies behind and may have difficulty in securing more later for the lack of hunting light. I do not think any one takes an unreasonable degree of risk who travels in the Arctic with only game for food, whether it be on land or ice, during the periods of ample light. But when the daylight begins to fail towards fall, the traveler is under a severe handicap. Realizing this, we had begun to talk about how we would spend the winter on this solid floe that in two weeks had begun to have for us something of the friendliness and security of home, and to speculate about which way we might drift and how far from land we should be by the time daylight came back in the spring and we could resume travel.

But on June 5th a chance to leave came at last. The lead before had been narrow enough for crossing had there been open water, but the young ice had always been of that unfortunate sort which obstructed the boat without being strong enough to support the sled. But this morning adhering to our ice island were only about fifty yards of young ice and beyond that a quarter of a mile of open water, and then some strong-looking young ice adhering to the other shore. I had the night watch, as usual, and awoke the men at about one in the morning, telling them that I had decided to try a crossing. It took about half an hour to break a road through the fifty yards of young ice to the water and half an hour after that our first load had been ferried across. A head wind meantime had been increasing and the lead was rapidly widening. By throwing away most or all of our meat and blubber we could have ferried across in two loads with smooth water, but as white caps soon began to run we did not dare to load the sledboat heavily. It seemed to me possible also that the ice on which we were landing was itself only a little island and that we might not be able to travel on it far. This induced us to ferry a fourth load, consisting entirely of meat and blubber. Although we took with us a thousand pounds, we abandoned more than a ton of food on our island.

The last crossing was made with some difficulty, for the lead was now nearly a mile wide, as I thought, and a mile and a half as Storkerson and Ole estimated it. The wind had risen to almost a gale and the waves struck the front end of our blunt boat with such force that for ten or fifteen minutes I was doubtful if we were making any headway. The dogs, always bad sailors in a rough sea and always getting out on the leeward edge of the boat, had been taken across in the earlier trips. Had the wind been even a little stronger, our separation would have been pleasant neither for them, tied on the leeward side, nor for us, marooned on the windward side of ice floes drifting rapidly apart. We got over after a hard paddle, and it fortunately proved that, although our landing beyond the lead had been made on what had been a small floe, this was now connected by some passable young ice to the next ice island beyond, and we were able to proceed by treacherous bridges of young ice from floe to floe eastward for ten miles.

Undoubtedly the ice under us was still moving west, but as we had been carried west only ninety miles during eleven days of encampment, we were encouraged in feeling that now we were traveling east at least as fast as we were drifting west, and that should there be a change of wind the drift would probably set in the other direction, carrying us towards Banks Island at a speed to add substantially to our own traveling.

# CHAPTER XXI

## SUMMER TRAVEL ON DRIFTING ICE FLOES, 1914

NOW we had a good deal of cloudy weather and found the "water sky" exceedingly useful. When uniformly clouded over the sky reflects everything beneath it in the manner of a mirror. If there is below a white patch of ice, then the sky over it looks white, while a black strip of water is represented by a black line in the sky. It is hard on the eyes to travel in cloudy weather and hard on the dogs for picking trail, yet the water sky absent in clear weather more than makes up for these disadvantages. Leads were all about us but the corners of various cakes were touching, and by keeping our eyes on the cloud map above we were able to travel sometimes a day at a time without even seeing water. Fortunately for us, the leads ran in such a direction and the cakes met in such a way that the course which enabled us to avoid the leads was northeast, which was also the course we most desired to travel.

But when the sun came out, astronomical observations showed that while we were traveling northeast at an average estimated rate of about ten miles per day, we were being carried south so rapidly that our actual course was southeast. With Norway Island the appointed rendezvous, it had been for some time my intention, if we could, to make the landing at Cape Alfred, the most northwesterly corner of Banks Island, so that our ice exploration might be as comprehensive as possible. We would then travel south along the coast to Norway Island, where we would build a beacon on the most conspicuous hill for the information of the *Star*, and go on, since Norway Island is shown on the chart as only six or eight miles in diameter, and hunting would probably not be good enough to justify a stay. Sealing and consequently bear hunting might be good but we would prefer the mainland to the east on account of caribou, as we wanted their skins for bedding and clothing the coming winter.

During the following three weeks in the slow struggle towards shore we were voluntarily delayed by the frequent soundings. For some days the water was too deep for our length of wire but on

June 11th we again reached bottom, this time at 668 meters. From that point we sounded every few miles, took very careful account of marches between soundings, and located ourselves by astronomical observations on every clear day.

During this week the struggle was a bit discouraging. Some days travel was impossible because of bad weather and excessive ice motion, and on those days we lost ground, for the ice was always drifting south and sometimes west as well. When we did travel we had trouble not only with open water but with the softness of the snow. Drifts which would have been hard under foot, scarcely recording impressions of the feet of men and dogs in a temperature below freezing, were now heaps of snow resembling granulated sugar, through which it was no easier to walk than through a bin of wheat. The sled sank into this snow so that we had to drag it like a snow plow, and the dogs floundered for lack of solid footing. Sometimes the men had to force the sled forward ten or twenty yards at a time with no help from the dogs, and often this was not possible until after we had tramped back and forward several times making a sort of road for it.

On previous expeditions I had had to deal with snow of this sort and been led by it to devise an improvement to the ordinary Alaska sled. Alaska sleds as built in Nome and elsewhere are twelve or fourteen feet long and twenty-one to twenty-eight inches wide. As their pictures show, there are stanchions upward from the runners so that the load is borne on a platform from six to nine inches high. This platform is supported by cross benches underneath between the stanchions, and as the sled sinks these cross benches catch the snow and push it forward. When this happens it is not possible to move the sled without an expenditure of force many times greater than would be necessary if the cross benches did not touch the snow. For travel through soft snow no sled is really suitable except the Indian toboggan, but it is not practical in rough ice nor upon hard roads. There occurred to me a plan for combining the advantages of both types of sled by nailing boards underneath the cross benches of the Nome type so that when the runners sank deep enough to bring the body-part into contact with the snow, the under-surface should have the character of a toboggan and ride smoothly over the snow exactly as a toboggan does.

Like most innovations, this one had met with no favor among the experienced men of my expedition. In Nome I had had several sleds made with toboggan bottoms, but in the southern section of the expedition and also on the *Karluk* these bottoms had in my absence been removed, on the theory that they were an additional and useless weight. In outfitting for my ice journey I had had the toboggan bottom replaced on one sled, but this happened to be the one Wilkins had with him when he got accidentally separated from us. The one we now had was of the ordinary, unimproved Nome type. Not unnaturally my diary entries of those days included more or less wailing over the fact that it did not have a toboggan bottom. My companions were so thoroughly persuaded by our experiences that this was the last ice trip of the expedition where any one wanted to use a sled without a toboggan bottom.

By the 15th of June the depth of water had decreased to 350 meters and land birds began to appear, snow buntings and jaeger gulls and a few days later king eiders and old squaw ducks.

On June 22nd the soundings had come down to about 50 meters. From a low hummock at this sounding place I looked across about half a mile of level ice to a very high pressure-ridge, and between the crags saw beyond something dark and uniform in outline which I felt sure was land free from snow.

Storkerson and Ole were standing beside the dog team, and I called to them to come to the top of the hummock. But they had learned skepticism through frequently taking for land either hummocks of dirty ice or distant banks of thick, billowy fog. Ole admitted that he saw "something black that might be land," but Storkerson, perhaps to guard himself from disappointment, maintained that nothing could be seen which we had not frequently seen before and found to mean nothing. To settle it we hurried the half mile to the high ridge between whose crags the dark outline had been revealed, but one of our sudden arctic fogs had intervened to the eastward and from the ice pinnacle everything in that direction now looked white.

Just beyond this ridge was a lead of open water which we crossed by an ice cake lying transversely across. We were tired and made camp, but before going to sleep I took a sounding showing 39 meters and land birds began to appear, snow buntings and jaeger

Next morning, June 23rd, I was up early and able to write in my diary: "The land is no longer problematic. It is in plain sight in the form of three hills, the more northerly two of which are probably connected, as the southernmost may be also. The north end bears North 17° West and the south hill North 5° East. The distance to the land is not less than ten miles and may be a good deal more."

To those who have given little thought to the peculiarities of the magnetic compass, it may seem strange that land lying to the east should by compass be seventeen degrees west of north. This is because the magnetic needle does not point to the North Pole, which is north of us wherever we are unless we are standing on the Pole itself, but approximates towards the magnetic pole, which is at some not yet exactly located spot in the vicinity of the peninsula of Boothia Felix in northeastern Canada. The saying that the needle points to the magnetic pole is in few places on the earth an exact truth. Its direction from Banks Island, when we speak "true" and not "by compass," is southeasterly.

For several days before we came in actual sight of what proved to be Norway Island, our rendezvous, we had seen in the sky to the eastward a peculiar pink glow. We thought it might be a reflection of dead grass covering the hills of Banks Island, but it had another cause. When we commenced traveling over the landfast ice, some twenty miles offshore, we noticed in the snowbanks that peculiar tinge of pink—it may sometimes almost verge on red—due to the microscopic plant known as "pink snow." It was this that was reflected pink in the sky. The layman finds it curious that these plants appear to flourish best on the north side of snowdrifts, where the sun is least warm at any time and where freezing may take place while another slope of the same drift is thawing. In some mountain ranges these plants are said to be so numerous in the snow that it has a pinkish tinge even when held in the hand, but where we have traveled the pink can be seen only at a distance of several yards and best at a distance of thirty or forty yards, for on close approach the snow looks only white or a little dingy.

We were somewhat surprised to find the ice aground here in thirty-nine meters, or about 120 feet. The actual freezing of sea water does not produce ice in these or probably any latitudes of more than six or seven feet in thickness, but the telescoping of it under pressure may, as we have described elsewhere, increase this thickness indefinitely. Few districts are more frequently under violent stress than the west coast of Banks Island, where some of the pressure-ridges project more than sixty feet above the water, their base resting solidly on the bottom 120 feet below. It is a peculiarity of the strong westerly winds on the north coast of Alaska and the west coast of Banks Island that they bring with them a high "storm tide," raising the level of the water six or eight feet above ordinary high tide. The coastal ridges of ice are thus heaped up, especially in the zone lying between five and twenty miles from the Banks Island coast. When the thaw winds come in the spring and summer, the warmest are from the east and southeast. The stronger the east winds the lower the "tide," so that the ridges which have been heaped up with a high tide are solidly aground and immovable to any effort of the east wind. For this reason a typical summer condition on the west coast of Banks Island is that the moving pack to seaward is driven far out of sight to the west, and a lane of open water along the land is produced by the warm rivers from the interior, while there remains a belt extending from half a mile to fifteen miles offshore where the ice still lies unbroken and immovable. Occasionally a west wind brings a high tide and then drops suddenly enough to allow an east wind to start before the tide has fallen. Then the entire mass of shore ice may go abroad in two or three hours.

Our first sight of land had been from a distance of nearly twenty miles. The going from this point was exceedingly bad. We waded sometimes through water nearly up to our waists, while the dogs had to swim and the sled floated behind like a log of wood towed across a river. A far worse condition was when the miniature lakes on top of the ice were filled not with water only but with slush snow. Though your feet went straight to the bottom, real wading was not possible and either walking or swimming was quite impossible to the dogs. In places like this you had to force your way back and forth through the slush several times, making a sort of ditch or canal preliminary to taking hold of the leading dog and dragging the team after you while the other two men pushed the sled from behind. The hardest kind of work gave us only six miles per day.

Our first sleep on the land floe had a comfort and security about it that we had not known for over ninety days. No drift could now take away from us in the night whatever distance we had won during the day. No crack would open under us, no cake would tip on edge to spill us into the water. Later years brought us thorough familiarity and confidence in the ocean ice, but the relief and at-home-ness of the land ice then were beyond description. Besides the uncertainty of reaching Norway Island in order to meet the *Star* in the fall, we had also the unacknowledged doubt of whether we could reach land at all. No matter how sound the reasons for your confidence in a theory, it seems to be part of a somewhat irrational human nature that you never feel quite sure of being able to do anything unless you know that some one has done it before. The universal skepticism on the Alaska coast among whites and Eskimos alike of the possibility of making the five- or six-hundred-mile journey over frozen ocean to northwest Banks Island had somehow soaked into our bones. So far we had never slept without feeling, although there was no evidence to our senses, that our beds were drifting. Sometimes it was a drift favorable to us and sometimes against, but there was always the gambler's tenseness about these erratic camping places that were always carrying us either toward or away from our goal. The passive security of the land-fast ice was a feather bed and down pillow which brought the first real relaxed sleep for three months.

# CHAPTER XXII

## LAND AFTER NINETY-THREE DAYS ON DRIFTING ICE

WE landed on June 25th at 8:10 in the evening, ninety-six days out from the Alaska coast. Measured by a string laid on the surface of a globe the journey is a little over five hundred miles, but a checking up of astronomical observations shows that, counting the adverse drift, we had traveled about seven hundred miles. But whether the trip be called five hundred miles or seven hundred, neither figure measures its difficulty. If the same journey were to be undertaken by a party equipped like ours each year for ten years and were to be started a month or six weeks earlier than we started, I believe it could be done, in at least nine seasons out of the ten and perhaps in every one of the ten seasons, on the average in about half the time that it took us. For our difficulties were not the mileage but the warmth of the weather, with consequent mobility of the ice and treacherous ice bridges that after each gale formed all too slowly between the floes. If we were to make the journey again we should also start with a lighter load from Alaska, having now no longer a mere theory, but a theory verified by trial, to give us complete confidence in the food and fuel supplied by the arctic high seas.

On the last day we had camped on the sea ice a mile and three-quarters from shore. We might have been impatient to reach the land that lay green and close to us in the sun, but from the point of view of the arctic traveler the fundamental difference is not between sea and land, but between the moving ice on one hand and the land-fast ice and land on the other. When we had left the moving pack for the grounded shore floe, we had already counted ourselves ashore.

Still there was an interest all its own in stepping on the real land. There was plant life, with a kind of academic interest to the eyes, and there was the more practical importance of the animals and birds. Whatever else these animals and birds might be, they were potential food for us or food for the animals on which we feed. For, according to the law of this grewsome world, the worm implies the song-bird that feeds upon it, and the song-bird implies the owl that robs the little bird's nest and eats its young; the lemming implies the fox, and the footprint of a caribou or an old antler lying bleaching upon the hillside tells not only of the magnificent stag and gamboling fawn, but of the packs of wolves that follow the stag for days across the rolling hills and eventually eat him alive when he falls from exhaustion. (Only in the books of the nature faker is the wolf fleet enough to overtake the caribou after a short rush, and his fangs long and keen enough to cut the jugular vein. If animals have a sense of humor it is a pity they cannot read our popular nature stories or come to see an occasional "Great North Woods" or "God's Country" movie.)

From the first sight of land our concern had been to get ashore, so that we had left unkilled several seals along the way. Accordingly, we landed with no food for the dogs and only about half a meal for ourselves. While we were still a mile from shore with the southward slope of Norway Island conveniently spread out ahead, my glasses revealed one wolf, one fox, eight hares, some king eiders, Pacific eiders, old squaw ducks, and three dark geese, one of which on closer approach proved to be a Hutchins. After landing we saw some willow ptarmigan, plovers, Lapland longspurs, snow buntings, and two or three kinds of sandpipers. We found also the exgorgitations of owls and saw a few bees and blue-bottle flies. There were no mosquitoes, our later intimate acquaintances on the mainland.

Caribou tracks were on the beach, and while our side of the island certainly contained no caribou as reviewed from seaward, there might be some on the other slope. So I left the men to make our first camp on shore and to gather pieces of driftwood for the first campfire, and went to the top of the island to get a view of the far side. The island proved to be only about half as large as the Admiralty chart has it, only half as far from the next land east, and with the long axis at about right angles to what it should be by the chart. I ascended the most westerly of the hills, so that turning to the east I had to look first over three miles of the island and beyond that over three miles of ice to examine what I then thought was the mainland of Banks Island. And it should have been the mainland by the chart, but it proved to be an island about twice the size of Norway Island and much more fertile. That island we later named after Captain Peter Bernard of the *Sachs*.

In hunting on the grassy plains of the Arctic, a good pair of glasses and a knowledge of their use are about as important as the quality of your rifle and the pair of legs that carry you. I have found it as difficult to teach a new man the proper use of field glasses as to teach the use of the rifle or the understanding of any of the principles of hunting in the open country. The green man stands erect with his heels together, lifts the glasses jauntily to his eyes and spins slowly around on one heel, taking from half a minute to a minute to make a complete survey of the horizon. Then he announces that there is no game in sight. The experienced hunter will take some pains to find the best place to sit down, will bring out from somewhere a piece of flannel that is clean no matter how dirty he himself and every other item of his outfit may be, and wipe every exposed lens till he is sure there isn't a speck or smudge anywhere. If the landscape is well within the power of his glasses he will probably rest his elbows on his knees, but if the distance is great or the wind blowing, he will lie down flat with elbows on the ground, or will build up out of stones or any available material a rest for the glasses that cannot be shaken by the wind. If the wind is blowing hard he may even place a fifteen- or twenty-pound stone on top to keep them steady. There is never any pivoting or swinging motion as he brings them to bear upon successive fields of view. If the angle of vision is six degrees, as it may be with six-power glasses, or three degrees with twelve-power, he examines thoroughly the field disclosed by their first position and then moves them a less number of degrees than they cover, so that the second field of view shall slightly overlap the first. In calm weather and with an ordinary landscape it takes about fifteen minutes for one good look around from a hilltop, and under special conditions it may take a good deal more. If, for instance, somewhere near the limit of the power of the glasses is seen a patch that may be a caribou but which may also be a stone or a wolf, it may take an hour of study to make sure.

Six little white specks on a hillside were apparent now on what I thought was the mainland, a mile or two from the beach. The sky was clear and there was that quivering, wavy motion in the atmosphere which is due to the sun shining on areas of different nature, causing air currents to rise that differ in temperature and humidity. Through such an atmosphere all things have blurred outlines even if their shapes are not otherwise distorted, and the shape may easily appear fantastic. Small stones, round or flat, may look like tall pillars and even appear to move. If stones or the like appear to move they will all seem to be moving in the same direction. This may be the case with caribou, although they seldom retain their relative positions as immovable bodies seen through a mirage would do. My six specks looked round and had blurred outlines, so there was no telling whether they were stones or caribou until one's mind was made up by study. They might have been white geese, for in looking across a range of hills and then over some invisible ice beyond to a second land, there is no easy way of estimating distance. It took about half an hour of watching before one of the bodies moved with reference to the other five. These were then not stones, since one of them had moved, and not geese, because six geese at this time of day would not have retained their positions relative to each other unchanged for half an hour. By a process of elimination, they were caribou, which had all been lying down, until just now when one got up and moved a few steps.

The men in the camp below had supper cooked and could be seen waiting for me; but as there were no caribou on the island and we had only half a meal of food, and as a wolf might come along and chase away my band of caribou or fog arise to shut them from view, I decided to go after them at once. Following the sky line of the island to make sure that the men saw which way I was going, I started eastward at a brisk walk. I knew they would infer that there was no use waiting supper, I also expected they would infer that they were free to eat all the meat there was. To have saved a third of it might have been courteous and even kind, but they ate it all on the assumption that I would secure my own supper before I came back, which was a vote of confidence I valued far beyond kindness or courtesy.

When I started towards the caribou I thought I was going after my supper, but it turned out to be breakfast. For when after three hours of walking I came within half a mile of them, I found them grazing near the middle of a huge saucer-shaped bowl of grass-land where it was impossible to approach from any side without being seen. In an uninhabited island caribou might popularly be expected not to be afraid of a man. As I understand their psychology, neither would they if they could know he was a man. But how are they to know it when with their poor eyesight they can see an object and still not be able to tell whether it is a wolf or a caribou? When anything comes unexpectedly into sight they make their decision on the side of discretion, assume what they see is a wolf and promptly flee, although as often as not what they flee from is another caribou or some other, to them, entirely harmless animal such as a fox or polar bear.

In view of the topography and of the nature of caribou, there was nothing for me to do except to wait. Of course I might have adopted the hunting tactics of the Slavey and Dog-rib Indians of the mainland, who rush up to a band of caribou at top speed, hoping to get within shooting range before they begin to run, and hoping also that because of their peculiar antics the caribou will be convinced at once that they are not wolves, and will circle to get a better look or to get to leeward to prove it by the sense of smell. I have often seen this method used by Indians and never with great success. They may get one or two out of a band or they may get none, and their stories of occasionally killing whole bands I have never verified, nor has any one on whom I thoroughly rely. But by more common-sense methods, one can usually get every animal of a band of six or eight. In a country where game is scarce, as it is in nearly every region where I have hunted, it is necessary to kill a majority of the animals seen, and I long ago discarded the haphazard methods of the Indian, which too often leave you hungry and empty-handed after several hours to begin the hunt all over again.

The caribou grazed in the center of their bowl from half-past eleven that night until about three in the morning. They then lay down for an hour, and about four o'clock commenced grazing slowly in a direction directly away from me. What I had to do was to move a little farther off, till at something over half a mile I was sure they could not see me. Then I circled to be directly in front of them and lay for about an hour motionless till they were within two or three hundred yards, when I shot all six in eight shots.

The work of skinning and dismembering took some time and it was an eight-mile walk home, so that by the time I arrived at camp the men had had a good night's sleep and were up and ready to cook breakfast. Only they had nothing to cook. They knew it was one of my most firmly adhered-to rules that on any long trip where ammunition has to be husbanded, no animal smaller than a wolf shall be killed. They had been discussing how good the geese on the hillside would taste, and wondering whether I might not be willing to make an exception in this case and allow the landing to be celebrated with a goose or two. They had even come to a decision, and one of our proudest traditions might easily have been shattered by the expenditure of a bullet for five pounds of meat when it should have brought one hundred. But the tradition was saved by my arrival with six caribou tongues for a preliminary breakfast, and the announcement that by moving seven miles we could camp in the vicinity of the deer-kill with driftwood enough to cook two or three successive meals of boiled caribou heads.

When we got ashore Storkerson and I had a real feast of boiled heads. But not poor Ole, who sat eating steaks of caribou tenderloin and wishing he had salt or onions to make it less insipid. It must be said for Ole, however, that he learned more quickly than most tenderfeet, for we had not been in Banks Island more than a week when he quit frying steaks for himself and began to join us in the eating of boiled heads and briskets and ribs.

The tastes of the northern hunters who live on meat alone are nearly uniform whether they be Indians, Eskimos, or white men resident with either people, though they differ strikingly from the tastes in meat acquired in connection with modern European cooking. These northerners eat their meat by taste, as our ancestors must have done when originated the saying, "The nearer the bone the sweeter the meat." Nowadays we do not judge meat with our palates according to its flavor but with our teeth according to its "tenderness." To aid our teeth in the judgment of meat we call on our eyes to differentiate between dark and light meats. One of the main difficulties in trying to introduce a new meat into the dietary of a "civilized" people is the problem of matching it in color with some meat already in favor.

I have known white hunters who carried salt with them to stick for a surprisingly long time to European ideas of cooking. But if one has no salt the organs of taste recover rapidly from even scores of years of abuse with seasonings and sauces. When the sense of taste has regained a moderate delicacy, white men fall naturally into agreement with the Eskimos and northern Indians in classifying the parts of caribou about in the following descending order of excellence:

The head is best, and except the marrow the most delicious fat is back of the eyes. These flavors are the strongest and most pleasing of the whole caribou. Then comes the tongue. Next are brisket, ribs and vertebræ, but in all of these we usually remove for dog feed some of the outer meat, reserving for ourselves the "sweet meat near the bone." Next come hearts, kidneys, and the meat near the bone on the neck. Shoulders are next. These are more often eaten by the Indians than the Eskimos, as are also the hearts, apparently because the Indians use roasting now and then as a method of cooking, and these parts seem better roasted.

Here it may be remarked that frying is a method of cooking unknown to the natives of northern North America and they take very badly to it, except the frying of bacon, ham and imported meats generally. I have known both Indians and Eskimos proficient enough in white men's cooking to have jobs as cooks in trading posts or on ships, but even they go back to exclusive boiling and roasting of native meats and fish if they start housekeeping for themselves.

It is seldom among the Alaska and Mackenzie River Eskimos that caribou hams are eaten when there is enough of other meat. The hams, some of the entrails, the lungs and liver, the outside meat from the neck and brisket, and the tenderloin are the food of the dogs. There are partial exceptions to this rule, for several reasons. When fuel is scarce, as it occasionally is in Coronation Gulf, boned hams are cooked, as they require less fuel per pound, being cut in small pieces for boiling. The summer of 1916, for instance, we were compelled to eat ham meat for lack of fuel. Also when you are drying meat it is often convenient to dry hams, which are more easily sliced thin; as dry meat, they will be eaten later. Still, the Slaveys and other Indians usually prefer drying boned rib meat, and these are the favorite food of the Hudson's Bay Company's men and other northern fur traders, who buy them from the Indians.

Such are, roughly, the tastes and preferences in lean or moderately fat meat that are common among the native northern meat-eaters and that are acquired by whites soon after they quit using salt and other seasoning.*

The tastes of meat-eaters as to the various fats of caribou and similar animals are perhaps more interesting than other sections of the same subject, for the reason that people of European culture have during the last three centuries allowed sugar to usurp almost wholly the field of gustatory delights where fats were once supreme, while yet the phrase "to live on the fat of the land" had a keen appeal to the senses.

I judge from the experience of myself and others that no one while living on the typical modern diet, largely made up of protein, sugar and starch, is capable of delighting in the fine shades of flavor between different kinds of fat. But this power comes very soon irrespective of climate to whoever lives on unseasoned animal foods exclusively. Then, whatever the race or bringing-up, there seems little variety in tastes as to fats. I imagine this would be so were the animals eaten cattle or sheep or fowl. I know with caribou that negroes, South Sea Islanders, Indians, Eskimos and Europeans of varied nationality generally agree that in point of palatability the fats of the caribou should be ranged as follows:

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* For a more detailed discussion of Eskimo tastes in food, see the section on "Food" in "Anthropological Papers of the Stefansson-Anderson Expedition," New York, 1914.

The least agreeable is the back fat. When tried out and made into tallow, it is harder than that from any other part of the animal. Next are the intestinal fat and the fat found in the interstices of the meat, as on the ribs, etc. The fat near the bone on the brisket is considered somewhat better than the last two varieties. Next would come the kidney fat. Best of all are the fat behind the eyes and the little lump of fat on the hind leg near the patella.

If these fats are tried out the ones considered preferable in taste generally make the softest tallow. Kidney fat, for instance, is softer than intestinal fat, and intestinal fat is softer than back fat. However, the fat from behind the eyes and from the leg are no softer than the kidney fat, although considered of a better flavor. This discussion refers to fats eaten after being brought to almost or quite the boiling temperature of water; in other words, underdone boiled fat.

Marrows are usually eaten raw by the northern Indians and almost always by the Eskimos and by experienced white hunters, although the femur and humerus are sometimes either roasted or boiled. In palatability the marrows are simple to classify, for the preferred ones are nearest the hoof, the ones farther away the least agreeable. While delicious, the marrow of the small bones near the hoof is seldom eaten because it is bothersome to get at and there is so little of it. In the long bones the marrow is not only preferable nearer the hoof when you take it bone by bone, but there is a distinct difference between the upper and lower end of each bone, the marrow of the lower end being better.

More exactly than in the case of the fats, the various marrows agree in hardness and palatability; that is, the softer the marrow the more palatable. This means also that the softest marrows are nearest the hoof and get harder and drier as you go up. We are speaking of their consistency at ordinary house or summer temperatures, say 70° F. At this temperature the marrow of the small bones near the caribou hoof is a clear liquid, of about the appearance of melted lard that is almost cold enough to congeal. We use it sometimes for gun oil if we run out of the commercial kinds. Not only are the marrows harder away from the hoof but the same applies to the fat after it is tried out. Tried-out fat from the phalanges is a thick liquid; tried-out fat of the humerus or femur is a tallow about as hard as if made from kidney fat.

Apart from those already discussed, there remains but one important kind of caribou fat and that is the tallow secured by first crushing and later boiling the bones. A difference in flavor and hardness may exist between tallows made from different bones but in this regard we have no experience, for when bones are pounded to be boiled for fat they are taken indiscriminately, vertebræ and briskets, head bones, long bones, back bones, etc.

This discussion relates to the season when the caribou are fat. At certain seasons no fat is discernible, even behind the eyes or close to the bone of the brisket. The marrow in all the bones alike is then liquid and has the appearance of blood, and I do not know that there is a difference in consistency or flavor. Such marrow when boiled congeals into a slightly tough substance, resembling the white of hard-boiled egg both in texture and flavor, or rather lack of flavor.

Experiment has shown us that fats and marrows of mountain sheep, musk ox and moose are to be classified both in flavor and consistency about as those of caribou, with two principal exceptions: In the moose it is considered that "moose nose" is about the most agreeable. In the musk ox the fat of the neck is rated higher than that of the back, while on the caribou there is not much fat on the neck and what there is is considered to have no specially fine flavor.

Apart from any intrinsic interest these notes may have as applied to the caribou directly and from their analogy to other mammals used for food, I offer them thinking that students of human anatomy may not in their investigation of the marrow of man have noticed these differences. It seems to me it would be interesting to note whether human marrow gets harder the farther away from the toes and finger-tips. The question of comparative flavor of human marrows will probably have to remain speculative.

# CHAPTER XXIII

## RECORDS, RETROSPECTS AND REFLECTIONS

THE day after moving to the deer-kill we discovered we were on an island about eight miles in its longest diameter and three or four hundred feet high, with the mainland about a mile away from the eastern end and about three miles to the south of our camp. There was only one more caribou on the island. This we killed and with its meat and what remained of the other six we crossed over and made an encampment on a sandspit near a good harbor. Here was considerable driftwood not only for fire but for building an elevated platform, upon which we stored such belongings as might be injured by foxes and other animals. Incidentally, we hoped that this conspicuous landmark might be seen by the *Star* when she came along and might guide her to where we were. At Norway Island we had erected the day after landing a conspicuous beacon on the highest hill. It contained a brief record of our journey from Alaska, and said that we expected to spend the summer hunting on the mainland to the east, accumulating meat for food and skins for clothing for the coming winter, and that we would be on continual watch for the *Star*.

June 28th and the days following Storkerson made a map of Bernard Island and killed on the coast one *ugrug*, or bearded seal, and some small ordinary seals, while I examined the mainland, especially to the east. We found Bernard Island to be in the mouth of a river larger than one would expect on Banks Island, in spring more than half a mile wide, while even ten or fifteen miles inland and as late as August when the water is far below spring level, one who does not want to swim has to look carefully for a ford. By September, however, there are numerous places where the stream is no more than knee deep, generally where it is wider and more rapid, so that the width of a ford fifteen or twenty miles inland will be thirty or fifty yards.

In the comparative leisure of these first days ashore I made long retrospective diary entries dealing with the circumstances under which we left Alaska and with the journey to Norway Island. Again I find reflections on how much more we could have accomplished had we been able to start a few weeks earlier from Martin Point, again the regret of our lost equipment in the separation from Wilkins and Castel. I find an entry about Storkerson and Andreasen in which, as I felt at the time, I gave them less than their due: "They are as well suited for this work as it is easy to imagine. Neither of them worries or whines and both are optimistic about the prospects. This last is important. Traveling with an empty sled and living off the country is no work for a pessimist." The longer the time that intervenes the more my feeling of gratitude to these men and my appreciation of them has grown. Those who have gone through a difficult experience anywhere will know that nothing more could be said, after all, than this: that if I had a similar trip to make over again I could not imagine any companions I should prefer to Storkerson and Ole.

The diary record of our dogs is that "they have done probably better work than any team in Arctic exploration. Two hundred and forty-four pounds to the dog is, I believe, a heavier load than dogs have heretofore hauled, and ours came near making thirty miles a day with that load in fair going. We have never had to do more than help them over the worst places." An Arctic traveler's feeling of gratitude to the dogs can be scarcely less keen than to men. Still, there was one of them, the same "Bones," who did little hard work after warm weather began. Nothing could induce Bones to pull steadily when the sun was shining warm on his sleek, fat back. When we landed, all our dogs were as fat as it is good for a dog to be, but Bones was fatter than that. Possibly this was his trouble.

What one thinks "at the time" has its significance, so here is a diary estimate of the journey:

"Our success, although less than half of what it would have been with a start three weeks earlier (so it looks now), has been greater than we had any reason to hope on March 22nd when we left Martin Point. We have carried a line of soundings of over 4,500 feet through four degrees of latitude and nineteen degrees of longitude, most of it unexplored and all of it unsounded ocean. We have determined the 'continental shelf' off Alaska and off Banks Island, and have learned something of the currents of the Beaufort Sea. Most of what we have learned is contrary to what men 'knew' before. This summer we may be able to do some further useful work in geography, geology and archæology in Banks Island. Next winter (if the *Star* and *Sachs* are able to follow my instructions) we can with our greater experience and better base hope for a more successful year. Counting on them, I now plan two trips;

one northwest from Cape Alfred, then north and then east to the north end of Prince Patrick Island; the other northwest from the north end of Prince Patrick Island, then north and east to Isachsen Land and back to Prince Patrick or Melville Island (in whichever place the *Star* is wintering). The most promising and interesting ice trip that I can see, however, would be to go north from, say Cape Halkett in Alaska in February to 77° or 78° N. latitude and then east to Prince Patrick Island. That is a trip I hope some time to make." *

And here is the record we placed in the beacon on Bernard Island:

"June 30, P. M., 1914.

"Storker Storkerson, Ole Andreasen and myself landed on the island next offshore from this one June 25th—men, dogs and gear all in good condition. Shall proceed to-morrow SE to the mainland. According to circumstances we may go up the river, in the mouth of which this island lies, to explore it; or we may go south along the coast towards Kellett. If no traces of us have been found farther south, any vessel of the Canadian Arctic Expedition finding this should proceed south along the mainland ten or fifteen miles in search of a beacon with further information. If none is found, the vessel should erect a beacon or two with information and then go back to this island or some place near it and prepare to winter. Wood should be energetically gathered from the beach within 20 miles each way and caribou should be hunted early to provide fat meat. There appears to be a good harbor on the SE side of the island (just beyond the prominent hill on the S corner). There seems also a harbor on the east of the island offshore from this one and there may be others on the mainland. If no suitable harbor is found, the vessel should look for one to the north rather than the south. The *Karluk,* should she come, might try to reach Prince Patrick Island if her commander thinks it advisable; the *North Star* and *Mary Sachs* should not go beyond Banks Island (except after picking us up). If no traces of us are found, small *caches* with things not likely to be destroyed by bears might be made for our use in two or three places. We have over 200 rounds of ammunition and both rifles are in good order, so there need be no fear for us on the score of starvation.

"V. Stefansson."

For the first week or two in Banks Island we saw each day some new kind of bird. On June 30th appeared the first phalarope and the first rock ptarmigan, although there had been already perhaps a hundred willow ptarmigan. From the fact that no females appeared, it is probable that ptarmigan were already nesting. No ravens or hawks were noticed the first part of the summer, although we now know that both ravens and golden eagles are native to the vicinity at this time of year.

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* A trip commencing with such a program was actually made in 1918. On account of my illness, the command was taken by Storkerson who has written an account of the enterprise which I have summarized in the Appendix of this book.

We have now come to a point where we must mention an animal that touches this story frequently later on, the "musk ox." And I don't think we had better call him "musk ox" in the rest of the book. The name is in a sense libelous of him, as it is in a sense deceptive to the reader.

I have made no researches to discover who first perpetrated the blunder of calling him "musk ox." It may have been some early English navigator who was a better sailor than zoölogist and misidentified him with the musk deer of Asia. Or possibly he was more of a trader than he was a scientist and wanted to lead people to believe that he had discovered a new commercial source of the costly musk perfume of our ancestors—a trick with many parallels in early exploration, of which none is more interesting than Eric the Red's frank admission that he named Greenland so in order to induce his fellow Norsemen to colonize it.

But once under the view of keen-eyed scientists the "musk ox" (and now we are through with the word, for we can exchange it for a better) got the fairly truthful descriptive name of *ovibos*, or sheep-cow. This is what he is to the casual view—a cow (or bull) with a coat of wool. For a description of his peculiarities and his exceptional merits from the point of view of usefulness to us humans, we shall wait for the account of that period of our adventures when he was our intimate and (so far as we would let him) friendly associate.

For the present I shall merely convey a hint of some of many reasons for refusing to imply by a misnomer that this animal has attributes that are really foreign to him. Sverdrup * says: "Having shot many of these animals and drunk the milk of the cows, without ever detecting the flavour of musk from which they are supposed to derive their name, I have decided to call them in this book polar oxen." We shall in general follow Sverdrup, and the great British explorers of the middle century who usually referred to these animals as "cattle."** It requires inhibition to refrain from using

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* "New Land," by Otto Sverdrup, London, 1904. See footnote to p. 35 of Vol. I.

** See the various journals of the Franklin Search as printed in the British Parliamentary Blue Books.

"ovibos" as a "popular" name, and perhaps I shall do so occasionally—not so much to give variety as to see how the reader likes it. But for the weighty authority of the Parliamentary Blue Books and of Sverdrup, who give us the precedent for calling them "cattle," "polar cattle," and "polar oxen," I should have favored "ovibos" as a name for daily speech no less than for scientific use.

We soon came to the conclusion that while polar oxen were now either rare or extinct in our immediate vicinity, there had been tremendous numbers up to thirty or forty years ago. This was to be inferred from the number of bleaching skeletons. Later I lived in Melville Island, a present habitat, where they are supposed to be as numerous to the square mile as in any ordinary arctic territory; and yet it is clear from the number of bones that there must have been at least ten times as many to the mile in Banks Island as there are now in Melville Island. This is natural and follows from the greater fertility of Banks Island. It is not in the main a matter of latitude but of topography. Melville Island is prevailingly mountainous, with large stretches where there is scarcely a blade of grass; the valleys and low places may be fertile enough, yet there are low, flat plains almost as rocky and barren as the mountains. In Banks Island there are mountains in the north end and in the south, but the rugged topography even in these places affords more areas suited to vegetation than does Melville Island. About three-quarters of Banks Island, embracing the entire middle, is best described to the person who has not traveled in the Arctic as typical prairie land. In the days before North Dakota was settled by farmers, I have seen there areas which could not by a casual glance be distinguished from the central portions of Banks Island. If you are a botanist and look closely at the nearby ground you will notice strange plants that do not grow in North Dakota, but you will notice also many familiar plants, such as bluegrass, timothy, golden-rod, dandelion, poppy, watercress and edible mushrooms. But if you glance off to a distance you will see the same sort of green hills rolling away towards the horizon whether you are in Banks Island or in certain parts of Nebraska, North Dakota or southern Alberta. If there is a difference it is likely to be in the greater number of small lakes in Banks Island, although even these are not very numerous, because the island has what the geologist calls "mature drainage," so that little creeks carry off the water that might otherwise be left in the form of ponds and lakes.

This was an ideal country for polar oxen, which are grass-eaters, with mouths not adapted to the picking up of the lichens that hug the rocky ground where they typically grow. In the opening of many paunches I have never found any appreciable amount of lichens, and am of the opinion that whatever lichens one does find have been accidentally picked up with the grass. This shows how much at variance with the facts must be the common belief that they prefer a mountainous and rocky country. In Melville Island and elsewhere I have found the living animals and the bones of the dead most abundant in the grassiest country, which, other things being equal, is also the most nearly level and the lowest. In mountainous districts animals will be found in the deep valleys grazing in sunny spots, not for any desired warmth, but merely because that is where the grass grows most luxuriously. If the bones of the dead are occasionally found on rocky hilltops, it is because the bands have retreated there in an attempt to defend themselves against the attacking Eskimos.

The absence of cattle from the fertile hills and valleys of Banks Island where they were recently so numerous has a historical explanation. The scattered bones are a confirmation of McClure's statement that when he wintered in Prince of Wales Straits and in the Bay of Mercy in the years 1850-53 "cattle" were numerous everywhere. In 1906 at Herschel Island I was told by whalers that, a few years before, a landing had been made in southwest Banks Island from the *Penelope,* which was then owned and commanded by Eskimos, and the *Narwhal,* commanded by Captain George Leavitt, and that recent traces of polar cattle as well as of Eskimos hunting them had been seen near Cape Kellett.

Then in May, 1911, when I visited the Prince Albert Sound Eskimos,* I found that most of that group spent a part of the winter in southeast Banks Island and that some of them occasionally spent the summer in the interior. From them I learned that cattle were occasionally found, and they told me specifically about a small band which during the spring of 1911, probably March, came down from the hills to the coast at the southeast corner of Banks Island, where they were killed. These same Eskimos told me that at a time which I estimated as less than half a dozen years after McClure abandoned his ship the *Investigator* in the Bay of Mercy, some Eskimos had found her. She was to them, naturally, a veritable treasure house, especially for her iron. The news spread through Eskimo communities as far south as Coronation Gulf and east towards King William Island, and the Bay of Mercy for twenty or thirty years became a place of pilgrimage for perhaps a thousand Eskimos. They made long trips there to get material for knives, arrow points, and the like, certain families making the journey one year and other families another year.

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* See pp. 281 ff., "My Life With the Eskimo."

Banks Island, which is less than 20,000 miles in area, has probably always been, as it is now, a country only moderately supplied with caribou. However that may be, cattle are much easier for Eskimo hunters to kill and the people who made the journeys to the Bay of Mercy undoubtedly lived during the summer largely on their meat. A few, after a hasty visit to Mercy Bay, may have gone to the southwest quarter of the island where geese can be killed by the thousand with clubs during the moulting season. Ovibos is one of the most conspicuous animals on earth and easily found. He has not the cunning for concealment nor the ability, and indeed not the temperament for flight. The Eskimo method of hunting is to sick a few dogs at the herd, which then forms in a defensive circle, the large animals on the outside and the calves and weaker ones in the center. This defense does well against the dogs, as it would against a similar attack of wolves, but is of no avail against the Eskimos, who lash their hunting knives to their walking sticks, converting them into lances, and go up and stab the entire herd. Or they may use their bows and copper-pointed arrows with equal effect.

When I got the story in the spring of 1911 about the discovery by the Eskimos of McClure's ship and their pilgrimages for a score of years to the island, I might have inferred the complete or approximate extinction of ovibos. I had not done so, however, and for some time after landing in Banks Island we were expecting daily to come in contact with them. We now know that the giving out of the iron in Mercy Bay must have been about coincident with their extinction. Their survival was longest in the south end of the island because that was most remote from the iron and therefore least visited. That the Eskimos had spent a part of each winter from February to April on the southeast coast does not affect the case materially, for at that season these Eskimos never hunt inland, or at least did not do so up to 1917, though they will doubtless change their habits as soon as the majority of them receive rifles from the incoming traders. It was not these winter visits, therefore, but the summer ones that led to the extermination of the polar ox.

# CHAPTER XXIV

## SUMMER LIFE IN BANKS ISLAND

ON July 2nd my diary records a word against the ravens and gulls. We predatory animals do not get along together any too well and are inclined to be jealous of one another. On this occasion I had killed a caribou that had a little fat, and while I was gone after pack dogs to fetch the meat, some gulls and ravens had found the carcass. They did not have time to eat much, but they did have time to eat every speck of fat. We had given up seal hunting because the pursuit of the seal on the summer ice is a very sloppy undertaking. Caribou fat was therefore precious to us and was as yet of limited quantity because the season was too early. Hence my annoyance at the gulls.

Next day I killed two bulls that had half an inch of back fat, and from that time on we no longer stinted ourselves on fat, although it was well towards the end of July before we began to give much of it to the dogs. This was not entirely because we were short of it but partly because we were anxious to save it for the winter. It was conceivable that ice conditions might prevent the *Star's* coming, in which case we should need fat badly, both for food and for winter candlelight. The first part of the winter we would then spend in Bank's Island and begin traveling when the light should be abundant in the spring. We talked of going to Victoria Island and thence to the mainland and over to Great Bear Lake, a country thoroughly familiar to me from my second expedition. But secretly I was hoping that when spring came we should, even in the absence of ships, find ourselves in such spirits and so equipped that we could make a second ice journey, preferably northwest from Banks Island.

To spend a summer in Banks Island as we did that one was a delight. Storkerson and I knew well the tricks and methods of living in an arctic land and Ole proved an apt pupil. The caribou grew fatter and their skins more sleek and better for clothing. We killed altogether about forty fat bulls and dried over half a ton of back fat, the equivalent of that much bacon. We lived on the most palatable parts, the heads and back bones, and the dogs lived mainly on the internal organs, while we sliced thin, spread out on stones and dried in the sun for future use the hams, shoulders and other fleshy parts. Being sailors, Storkerson and Ole were both good at sewing, and they talked much about the fine clothes they were going to make from the skins for themselves and me if the ships should fail to bring Eskimo families with their incomparable seamstresses from the mainland.

Like many others, I had gathered from reading polar books that fuel is hard to get in arctic lands, at least where driftwood is absent. But during my previous expedition I had learned that on the mainland of northern Canada, at least, there is excellent fuel to be found nearly everywhere, and so it proved on Banks Island. It has always been a marvel to me how the northern Indians who hunt out on the so-called "barren grounds" and the Eskimos of northern Alaska are able to grow up from childhood to maturity and old age without learning, either by accident or by the instruction of some wiser people, how to use certain common plants for fuel.

Readers of Frank Russell, Warburton Pike, Caspar Whitney, and others know how the northern Indians load up their sleds with dry spruce wood for furtive dashes into the dreaded "barren grounds." They use a little for cooking each day, and when in a week or so the supply is gone they expect to be on their way back and almost within reach of the spruce forests again. And if through any circumstance the journey is a little long, there are tales of hardship which seems to be felt no less keenly by the Indian than by the white narrator. It was so with the Eskimos of northern Alaska. When they went inland in days antedating blue-flame kerosene stoves, they used to take with them driftwood from the coast, or seal or whale oil to burn in their stone stoves or lamps. If they ran out of these they used to dig in the snow for willows, being thus a stage in advance of the northern Indian in resourcefulness in the open country. But if no willows were to be found and the seal oil ran out, they hurried back to the coast without a fire. This in spite of the fact that most or all coast tribes in Alaska knew that there were other Eskimo tribes in the interior—the inland Oturkagmiut and their neighbors—who had the art of finding fuel other than willows in the open country wherever they went. The Mackenzie River Eskimos to the eastward are completely ignorant of how to find fuel in the open country even in summer, except willows. But the Eskimos of Coronation Gulf and east all the way to Hudson's Bay find no difficulty in securing it in winter or summer, although their country is not nearly so well supplied with fuel plants as is the southerly "barren ground" into which the Dog-ribs and Yellowknives make their furtive dashes, or the northern portion of Alaska where the Point Barrow Eskimos experience fuel scarcity.

The summer of 1910 I was living with three western Eskimo companions among the Eskimos of Coronation Gulf. When after a day's march across the prairie we camped in the evening, my three Eskimos used to scatter and go sometimes a mile in search of small willows which they would gather with great difficulty into bags and bring home on their backs. Before this willow gathering was done our local Eskimo traveling companions would have their own supper cooked and ready to eat, for they used for fuel a sort of "heather," *Cassiope tetragona,* which grew in many places and always in those we selected for camp sites. I pointed out the great advantage of using these plants for fuel, but conservatism is a trait that is always stronger the more ignorant the people, and my Eskimos were unwilling to listen. Their people had always traveled in this kind of country and they had always used willows. It was an application in a field other than religion of the sentiment of the well-known hymn: " 'Twas good enough for father, 'twas good enough for mother." They seemed to feel there was something essentially wrong or degraded about using a "grass" when wood was available. This same conservatism had prevented their ancestors as long as they lived in Alaska from learning the art of "grass" burning from the Oturkagmiut. There they were in their own country and public sentiment was overwhelmingly on their side, but here they were in the minority with everybody laughing at them. They stood pat for a month, but finally gave in; and before fall we were able to cook a meal as quickly as any of the local people.

This is a digression, the point being that the plant *Cassiope tetragona* grows abundantly in most parts of Banks Island, and that usually we were able to pick a camp site where around our camp fire, in an area no larger than the floor space of a bedroom, would be fuel enough to cook a meal. In sunshiny weather with a moderate breeze blowing I would cook with heather even were dry willow at hand, and in my experience dry willow is rare, at least of that type which is most prevalent in the northern part of the North American mainland. There is, however, in Banks Island and the northerly islands and in rare places on the mainland another "willow" which has roots many times as large as that part of the plant which is above ground. The roots are found dead and sticking out on the tops of high hills, so that occasionally in summer and frequently when there was snow on the ground we used them in preference to heather, and especially in calm weather or after a heavy rain. But no matter how soaked with water, *Cassiope* can easily be burned if you know the method and if there is a strong breeze fanning the fire and kindling enough to start the blaze.

Mosquitoes, the one serious drawback of the North—far more serious in the minds of all who know than winter darkness, extreme cold or violent winds—were not very serious in Banks Island. For one thing the drainage is fairly good; for another, the winds blow often enough from the ocean to keep the temperature lower than mosquitoes like. Perhaps the richest hunting country known to me is the region between Great Bear Lake and Coronation Gulf, but it has the disadvantage of a plague of mosquitoes and flies. And so on the whole these months of tenting and wandering in Banks Island are the most delightful of my summer recollections from the North, though they did not come quite up to autumn and early winter just north of the arctic circle on Horton River or on the Coppermine.

I feel like mentioning here that I cannot understand the psychology of northern travelers who employ Eskimos and Indians to do their hunting for them. I would as soon think of engaging a valet to play my golf or of going to the theatre by proxy. Not that I enjoy the killing of animals as such, but I should dislike extremely the feeling of dependence in work or play, of knowing that it hinged on the skill and good will of any one, no matter how competent, whether I should have something to eat to-morrow or whether my plans were to fail for lack of food. I do not see how any one could get much enjoyment out of living in a camp supported by hired hunters. Neither have I at the time nor in retrospect any hesitancy of mind when I compare the pleasures and ease of the city or the summer resort with the northern caribou hunt, whether it be in the soft air and sunshine of summer or in December's keenest wind and snow. The one sort of pleasure is passive, receptive, enervating—you are jaded by it and the keen edge of your enjoyment turns dull. But the open life of him who lives by the hunt keeps indefinitely the thrill of endeavor and achievement, a thing never to be bought or secured by having others carry out for you the most elaborate or ingenious of programs. And all of this becomes even more worth while when the food and clothing of your companions depend upon the hunt, and most when your very lives hang on success.

The first half of July we hunted from our camp on the mainland opposite Bernard Island, but in the latter half Storkerson and I made a trip into the interior, mainly for exploration but partly for hunting, leaving Ole to guard the depot on the coast. As fat is precious above all things in the Arctic and caribou fat good to eat beyond most food of any kind, we chose to kill old bulls, for they were now the fattest. It is the nature of caribou that different ages and sexes are fat at different times of the year. A comparative statement of their fatness is about as follows:

In late November after the rutting season the old bulls are so thin that there is no trace of fat even behind their eyes, and the marrow in their bones is like blood. At this time both the cows and the young bulls are about at their fattest, although the proportion to the total body weight is never as high as in fat old bulls. By Christmas the young bulls have lost most or all of their fat, while the cows have less but are still not thin. About this time or in January the old bulls shed their antlers and from that time take on fat, although none is discernible at first. By February or March, when the budding antlers of old bulls are six or eight inches long, the marrow improves and traces of fat appear behind the eyes, about the kidneys and on the brisket. The young bulls are still lean and the cows carrying their young have become considerably thinner, although they have a little back fat and considerable intestinal fat, especially caribou in the islands north of Canada where they are fatter than in most places on the mainland. By May or June the cows have lost all fat while the oldest bulls have gained enough so that their meat becomes palatable. The young bulls show no perceptible change. In July, when the cows are just beginning to fatten the old bulls have a slab of fat on their backs covering the entire body forward to the neck, and reaching on the haunches a thickness of perhaps half an inch or an inch. By late August or early September this fat has become three inches thick in extreme cases, and will weigh before drying thirty or forty pounds if the animal is large. At this time the intestinal fat is an additional ten or fifteen pounds besides the great amount on brisket, ribs, pelvis and elsewhere; so that you have from sixty to eighty pounds of fat on an animal the dressed weight of which, when head and hoofs have been removed, is probably between 250 and 300 pounds. The cows also are moderately fat, and gain a little for the next month or two, as do the young bulls.

From this statement the fatness of caribou is seen to depend not, as is commonly supposed, upon food and climate primarily but rather on the age and sex of the animal. Neither can it be the fact as set forth by certain writers that in midsummer, which would be July or August, caribou are poor simply because of their persecution by insect pests, chiefly mosquitoes and botflies. The bulls at this season are approaching their fattest, even though the cows, upon which exclusively some authorities apparently base their reasoning, happen to be very poor. Since all caribou are greatly annoyed by mosquitoes and flies, it is reasonable to assume that they would be fatter if these pests were absent, but fat they are in spite of them if age and sex are right.

Another point of evidence that the thinness of caribou in summer is not primarily dependent on mosquitoes is that the cycle of fatness and leanness is about the same in the most mosquito-infested parts of the mainland as in the more northerly islands of the Canadian Archipelago where mosquitoes are so rare that in one island, Lougheed Island, we saw only one mosquito all summer. But in these northerly islands the caribou fatten a few days earlier and become a little fatter in proportion to the total body weight. That a caribou may be as fat in Lougheed Island on the first of August as it would be at Great Bear Lake the middle of August is probably due to the absence of mosquitoes in Lougheed Island; for the feed, although good, does not appear to be any better in the more northerly lands.

The hunting and exploring trip into the interior of Banks Island was an interesting and delightful one for Storkerson and me. Here was a beautiful country of valleys everywhere gold and white with flowers or green with grass or mingled greens and brown with grass and lichens, except some of the hill tops which were rocky and barren. These hills differed in coloring, especially as seen from a distance, not so much because of the colors of the rock as because different vegetation prevails in different kinds of soil and different lichens on different rocks. There were sparkling brooks that united into rivers of crystal clearness, flowing over gravel bottoms. When we came to a stream we usually followed along, whether for a few hundred yards or several miles, until we came to a place where the river either split into branches or widened out. Here we took the packs off our dogs, for their short legs unfitted them for keeping a pack dry while fording, and with our good Eskimo boots keeping our feet dry we would wade across, the dogs swimming behind us. Heather was most abundant, and so were bull caribou, so that the meat we lived on and the fuel for cooking it were of the best.

When we are on a hunt proper we pitch our camps on the tops of the highest and most commanding hills, for caribou are such mobile animals that one is likely to see almost as many while favorably encamped as while traveling from place to place. But this time we were not hunting primarily, so we used to camp in sheltered, sunny places beside brooks that had their banks thickly covered with heather, giving both water and fuel right at hand.

I have just mentioned that the animals we were killing for fat were the oldest bull caribou we could find. People who do not know caribou and who think of them by analogy with cattle, imagine that the meat of a bull would not be especially palatable. All experienced hunters, however, Indian, Eskimo or white, know that the bulls are better eating than the cows or the calves, and the more palatable the older they are. To me the main consideration about meat is its flavor. The recommendation that meat is tender is the praise of a toothless generation and one addicted to such artificial cooking that we seldom get in our foods their native flavors, but rather flavors conferred on them by sauces and condiments. I prefer the terminology of our meat-eating ancestors whose various idioms, which we still keep though we hardly understand them, show that they knew meat flavors and appreciated them as hunters do. Having good teeth it is of little concern to me whether a piece of meat is tough or tender; what is important is the taste.

Besides, a caribou can never be tough. No one familiar with their typical life history can believe that the meat will get tough through age, the factor which causes toughness among domestic chickens and cattle. These last under the artificial protection of domesticity may grow to any age, and polar bears and ovibos may live on by reason of their strength and habits. But caribou never live long after they are full grown. Northern wolves in books prey on fawns and yearlings, and doubtless it happens occasionally that a wolf kills a calf, but this is likely to be within twenty-four hours of the calf's birth. A calf is certainly not many days old when he is able to run faster than his mother and faster than any other member of the herd unless possibly the yearlings. The young cows can run faster than the old cows and the young bulls faster than the old bulls, so that when a herd is fleeing from wolves it is always the oldest bulls that bring up the rear. Observers who enjoy reading chivalry into the actions of animals doubtless find instances where their deductions are correct. I am not in a position to say whether an old bull would by choice bring up the rear so as to expose himself to being first victim of the wolves. But I do say that he has no option, especially at the beginning of the breeding season when he is additionally handicapped by the weight of his huge antlers and his fat. When you see a caribou that has been singled out for pursuit by wolves, it is in the first probability an old bull and in the second an old cow. Skeletons of wolf-killed animals are nearly always found to be the skeletons of these two. In any caribou country the fewness of the old bulls is surprising unless these points are understood. Even the "old" few are never old enough to be tough.

Since that trip which gave me my first familiarity with the interior of Banks Island, I have crossed it in almost every direction, winter and summer, so that were all those routes plotted on the map it would be as if the island were covered with a spider web. We have thus made conclusive our inference on this journey, that cattle, although once numerous in Banks Island, are now either extinct or at the most represented by a few dozen animals near the north or south end, the parts we have least carefully examined.

# CHAPTER XXV

## OLE AND I GO HUNTING

ON our midsummer hunt into the interior Storkerson and I were absent about twenty days from the coast and from Ole, who was there alone with three of the dogs, guarding our dried meat and skins. Most people would think he would have found this rather a lonesome job, and so should I had I not known him well.

My first meeting with Ole was in 1912 in the spring when I was making a journey west along the north coast of Canada near the Mackenzie River. I found him in a trapping camp alone, where he told me he had been alone all winter. I remember asking him then whether he did not find it lonesome. He replied that there was no reason why he should. There was always something happening; sometimes the weather would be so bad that he could not go outdoors, and being housebound constituted a sort of adventure; another day the weather was exceptionally good and then he could go out and visit his traps, sometimes finding them full and other times empty. There must be something wrong, he thought, with any one who hankered for more variety than that. But even to this was added a monthly visit from his brother who came with a fast dog team from the winter base of the *Star* twenty or thirty miles away, and who usually stayed two or three hours, returning home at night. "And then," Ole said, "there is scarcely a month some Eskimo does not come, and sometimes they stay overnight."

There was no affectation about this with Ole. He was always glad to see visitors, but never lonesome between the visits. I cannot say that I ever quite understood this frame of mind, although I objectively realized it to be a fact that Ole would not mind in the least having Storkerson and me stay away a month if it suited us.

The third week of our stay inland we had already been farther east and had returned to a point about twenty miles from the coast where we had killed and spread out to dry a good deal of fat caribou meat. After some discussion, we had come to the conclusion that polar bears were very rare if not absent on Banks Island, at least at this season, and that it might be safe to leave our food supplies at the coast unprotected, bringing Ole inland to help with the hunt. I was also interested in the condition of the ice on the coast, for the coming of the *Star* was continually in my mind and the month of the possibility of this was almost at hand. The ice should have broken up already all along the north coast of Alaska and the three ships were, according to our best estimates, probably now in the vicinity of Herschel Island. It would not be more than a week or two till the *Star* could come across from the mainland to the south end of Banks Island, where in the vicinity of Cape Kellett she would await her chance to proceed north along the west coast whenever the ice should break away. The caribou were now getting towards their fattest and their skins had the right length of hair for clothing. It was important to hunt energetically for two or three weeks so as to have a large amount of meat and skins ready when the *Star* should arrive.

So I started for Ole's coast camp, leaving Storkerson behind occupied with the meat-drying. He might be expected occasionally to kill caribou that came near camp, but his chief task was to assemble the drying meat and cover it up at the approach of rain or of a heavy fog, to spread it out again when the sun came out or the wind began to blow, and to protect it from gulls, foxes and wolves.

It was a fine day when I started towards the coast, though it soon began to rain. Walking along the level bottom lands of the river, I came upon several small bands of caribou, and as I had not previously seen any when I had not needed to kill at least one of the band, I took the opportunity to experiment and see whether these were afraid of the appearance of a man. I found they behaved about the same as caribou would on the mainland in districts where they are frequently hunted.

Before I got half-way home I was soaking wet, but one accustomed to the Arctic does not mind that as long as he keeps moving, though it is not easy to get used to being wet in camp at night. One adapts himself to almost anything, however, and I have been told with apparent sincerity by northern Indians that they do not mind sleeping in wet clothes, even when they are so cold that they shiver. After all, the testimony of one man who is used to a thing and likes it is worth more than that of a hundred who are not used to it and cannot imagine how they ever could find it tolerable. So probably any one could get used to sleeping cold and wet.

About six miles from camp I came upon six bulls, one much bigger and fatter than the others. A northern hunter finds it hard to let go any opportunity for securing fat, and I accordingly killed this bull. I skinned it and got a slab of back fat weighing over forty pounds, which was at least ten pounds more than a bull of the same size would have had in the best hunting country known to me on the mainland at the same time of year. The reason probably was in the cool weather and in the fewness of mosquitoes, for although the feed is excellent in Banks Island, it can scarcely be considered better than on the mainland in certain places.

So it was evident that the caribou had not found this summer in Banks Island disagreeable. Neither had we, although a southern reader might infer the contrary from a glance at our meteorological record. July 3rd, it says: "Sky overcast, snowing all day, temperature plus 28° to plus 32°." In another place it says that a slight amount of ice formed every night during the first half of July. We liked this weather for many reasons; one being that it kept down the mosquitoes. The chief reason was, however, doubtless subjective.

This was the typical weather of the arctic fall, although in a sense unseasonable in July. When an Iowa farmer speaks of "beautiful hot weather," he really means it, although if he were to analyze his feelings he might realize that half the pleasure he feels in the heat is in the thought that it is ripening his corn and fattening his pocketbook. An equally hot day may not please a North Dakota farmer so well, for he remembers that the ground is dry and his wheat is withering. And just as the heat ripens the corn, so does the cold July wind from the ice-covered sea fatten the caribou, or what amounts to the same thing, keep down the mosquitoes which would keep him from fattening. So also do we like that same cold wind.

But in his exuberance of good health it is difficult for the arctic hunter to feel anything but pleasure in almost any kind of weather or almost any circumstance. I suppose what I am trying to explain is about what the Biblical writer had in mind when he spoke of a strong man rejoicing to run a race. You may find in some volume of the scientific report of our expedition that during a certain summer it snowed in every week but you should not infer it was bad weather in the sense that it made us uncomfortable. And it would not have made any one else uncomfortable either, if he had been dressed and housed and fed as we were, with the same years of training and experience behind him, the same sound health and the same infatuation with the work.

After cutting up my caribou and—with the gulls in mind—hiding the fat underneath the meat, I proceeded to the coast. Ole was waiting, happy as always and full of stories of his adventures while I had been gone. Most of these, as he told them, centered around wolves. It seemed that a pair of them, peculiarly sportive and mischievous, had been in the habit of coming near camp and getting the dogs excited, with a view of enticing them away. One day the dogs succeeded in breaking loose at both ends the long line by which all were tethered to two sticks. Dragging this line they gave chase to the wolves, Ole following. They were impeded by the weight of the rope and by getting tangled in it so that he was almost able to keep up. He fired several shots at the wolves, that tantalizingly were keeping just ahead of the dogs. This did not scare them. Of course he had little chance of hitting them, for he was out of breath. After a chase of several miles the dogs got finally so tangled in the line that Ole caught up with them.

A year later I discovered that while this story was literally true, it had been told me with added emphasis and detail to appease any suspicions on the score of Ole's considerable expenditure of ammunition while I was away. Early in July we had taken an ammunition inventory, finding that we had 109 rounds for the Mannlicher and 157 for the Winchester rifle. This was not a great deal even with the most careful shooting, for there was no guarantee that any of our ships would get to us during the summer, in which case this ammunition had to secure food for us for all of the coming winter and would have to take us east across Banks Island and across Prince of Wales Straits, then south along Victoria Island, across Dolphin and Union Straits to the mainland and across several hundred miles of mainland, probably to Bear Lake and to the Hudson's Bay Company's post at Fort Norman on the Mackenzie River. When we are stationary it is possible to average better than 125 pounds of meat to each cartridge, but in making rapid journeys it is not possible to be so economical, for when a heavy animal is killed only a part of the meat can be hauled along, causing a good deal of waste and bringing down the average meat equivalent of the ammunition. So Ole knew I put a high value on the ammunition; nor could his own estimate of its value have differed much from mine, for he saw equally our dependence on it for comfort and safety.

Now I have mentioned that the day we landed, while I was away getting the first caribou killed, Storkerson and Ole had eaten the last of the food we brought ashore and had discussed the probable delectability of the island geese, and the harshness of my rule that no ammunition must be spent on birds. It appears that ever after that Ole's mouth kept watering for the geese he had not tasted. Part of his contentment at being left alone when we went inland had been due, he confessed to Storkerson some months afterwards, to his lively anticipation of eating at least one fat goose while we were gone. Accordingly, we were scarcely out of sight when he got his rifle, sneaked around to a neighboring pond and killed a goose. But geese are small targets and it is not easy to get close to them, so that he wasted half a dozen bullets before he got the first one. Hence the necessity of impressing me, in case I should audit the ammunition account, with the large number of cartridges necessary to kill or scare the wolves that had been enticing our dogs away.

But what annoyed Ole most was that the goose when he came to eat it did not taste as good as the caribou he had been living on. While still of the firm opinion that caribou meat was "all right if you had nothing else" and that many kinds of meat, such as goose, were better and especially desirable "for a change," he had in reality become so accustomed to caribou in a month, and his tongue if not his mind had been so thoroughly converted to it, that the flavor of goose did not prove half as agreeable. He told Storkerson that if he had followed his inclination he would have eaten only a part of the goose, giving the rest to any dog that might have wanted it, but he decided to punish himself for the wasted ammunition by abstaining from caribou till the goose was eaten. Any ammunition he spent thereafter during our absence was fired at wolves.

Ole had been studying the tides, partly because of our scientific interest in them and partly because the sea ice that has been landfast during the winter "goes abroad" only when there is a high tide such that the ice is first lifted off the sea bottom by it and then pushed away from land by the wind. Ole had found that in Banks Island, as on the north coast of Alaska, there is a "low tide" with east winds, and a "high tide" with west winds. But what he had noticed in addition was that here the lowest water was brought about by a north wind. This was well exemplified the day I got home, for it was then blowing stiffly from the north and the water was six inches lower than it had been during our absence or at any time since we began to observe its height by sticks planted at the beach. This was not encouraging, for the winds that might be expected to take the ice off could not easily do so because of the heavy grounding of the ice at low tide, while the high water that lifted it off the bottom would be accompanied by a wind that shoved it on the land. What we would have to hope for would be first a west wind, raising the water level, and then a sudden shift of wind through south to east before the water had time to fall, a sequence of circumstances that might not occur in a whole summer.

After a day at the camp we started back towards Storkerson's hunting place, leaving all our dried meat and skins on an elevated platform high enough to escape wolves and foxes, although unprotected against polar bears. When we got to where I had killed the fat bull two days before we found that foxes and gulls had eaten about a third of the meat and about half the fat. The gulls alone would not have had the ingenuity to get at the fat where I had hidden it, but the foxes had pulled the concealing meat away. It happened that I was able to kill that evening another fat bull a few hundred yards from the same place, to make up for the loss.

White foxes were spending the summer in Banks Island in large numbers, but we lost surprisingly little meat by their thieving. Often they seemed even contemptuous in the way they passed it by untouched. This was probably because they were so well fed with eggs, young birds and lemmings.

When we got back to Storkerson we found that he had been bothered by wolves much as Ole had been. Some of our meat was at his camp but a considerable part of it was still out in the field, where several caribou had been killed, cut up and their meat spread out to dry to make it lighter for carrying home, only the fat being immediately taken to camp. Our experience with foxes and gulls had been that they were not very destructive of the meat, but now that wolves were about much of it was lost.

Wolves had been few during our first month and their appearance now was probably connected with the approach of the cow caribou. So far we had seen large bulls chiefly—very few cows and few small bulls. Now small bulls and cows became numerous, apparently coming from the north or northeast. This did not mean that caribou became as numerous as on the mainland, for we never saw more than twenty or thirty a day. I have seen a band of about two hundred in Banks Island, but several years' experience shows that bands of two hundred are as rare in Banks Island as bands of two thousand on the mainland north of Great Bear Lake. In summer there are probably not more than two or three thousand caribou in the whole island, with perhaps a few more in winter that come from Victoria Island to the east.

Partly to explore further and partly to give Ole a chance to see as much of the country as Storkerson had seen, he and I now made a hunting trip eastward from Storkerson's camp, a distance of about twenty miles. We found a beautiful country of rolling hills with small lakes and again an abundance of heather. I remember particularly one camping place in the bottom-lands of a small river where we pitched our tent on hard, level ground a few yards from a stream of the best water in the world, amid so much heather that we agreed that on ten acres of ground in a week or so we could have picked enough fuel to last the winter.

Everywhere the Eskimos had preceded us, although apparently none had been there in ten years. We formed the opinion that few of the relics were very old, probably none over a century. There were "tent rings," or circles of stones that had been used to hold down the flaps of a tent and had been rolled away when camp had been broken, giving a somewhat enlarged outline where the tent had stood. The Victoria Island Eskimos nowadays occasionally made a wall of sod from eight to twenty inches high as the base of their tents. Walls of this kind are found here and there over Banks Island, although not numerous. The tent rings are in places naturally suited to them—occasionally on hilltops and more frequently in lower places where there are "nigger heads," the little knobs one can take hold of and break loose with the hands, getting round pieces of sod varying in size from a grapefruit to a pumpkin. Of these the Eskimos had built the sod foundations for their tents, and we used them occasionally for the erection of beacons.

Near many of the camp sites were shavings and small pieces of wood. In at least three cases out of four these had been brought from Mercy Bay, for they were fragments of barrel staves, painted boards, or other parts of a ship or of the equipment of a ship. This was confirmation of the accounts of McClure, sixty years before, who saw no Eskimos at all on Banks Island, from which he appears to have thought that there were none and from which we now infer that they certainly cannot have been numerous. It was also confirmation of stories told me by the Prince Albert Sound Eskimos in 1911 and later, to the effect that there had been a great influx of people into Banks Island following the discovery by some of their number of McClure's abandoned ship, the *Investigator,* in Mercy Bay, probably about 1855.*

Often the Eskimo camp sites were in the vicinity of ovibos killings. Sometimes these kills seem to have been what we may call legitimate. The camp sites show heads and other bones that are the remains of animals actually used for food. This can be seen by the fact that the heads have been partly cut up for cooking, some of the horns have been removed to make utensils, the bones have been broken for marrow and many of them gnawed by dogs, and sometimes there is evidence that the bones were pounded up and boiled to secure the last bit of fat from them.

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*See "My Life With the Eskimo," p. 293, and elsewhere.

But in some cases it is only too clear that big herds were wantonly slaughtered. We have found groups of over twenty skeletons lying a few yards from each other. Such a slaughtering place has always borne some indication that a small part at least of the meat was used, and still it is not easy to be clear on this point, for the absent brisket bones and ribs, the parts Eskimos prefer for food, are also the parts most easily chewed up by wolves. That the bones of the foreleg, often found at a distance from the rest of the skeleton, were in some cases not found at all, is hardly an indication that an Eskimo carried the forequarters away. The foreleg is not a preferred piece of meat; and again, wolves in devouring a caribou or polar ox will eat the meat away in such fashion that the shoulder-blade comes loose from the body, so that the foreleg bones can be dragged away.

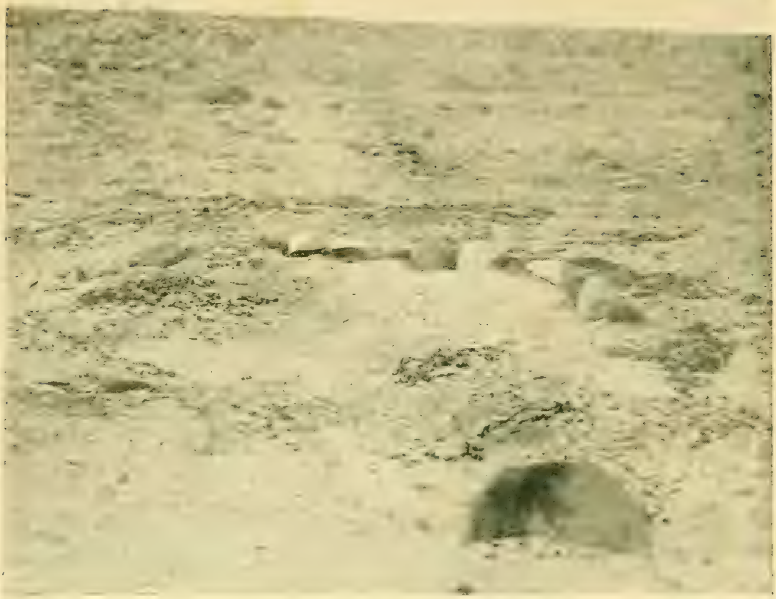
When Eskimos kill a band of cattle it will depend entirely on circumstances whether they stop beside the kill and remain till the animals have been eaten up, or whether they pass on, taking with them nothing or nothing but fat. We cannot assume that they would by analogy with the early buffalo hunters kill the animals for the tongues. Eskimos may kill for fat or kill for skins or for both combined, but they never kill for the tongues. They may, however, kill for no purpose at all, and leave their victims to be eaten by predatory animals.

Our wanderings in Banks Island, both this summer and summers following, never disclosed any Eskimo burial place, or any implements or other artifacts that seem to have been deposited with the dead. We did find two or three skulls and some odd bones, though none of these seemed to be the remains of a real burial. Either such burial places as there are escaped us, or else no true burials have been made. It is possible, in other words, that the Eskimos who moved about the island did not have the burial customs of the mainland Eskimos, and left their dead behind, unprotected by stones or otherwise, to be devoured by the first animals that came along. In fact we know that the Eskimos of Coronation Gulf, sometimes, at least, merely wrap the body in skins and leave it on the ground. These are near relatives of the people who came to Banks Island to plunder the *Investigator,* and it may be that the bodies of such people as died were similarly left.

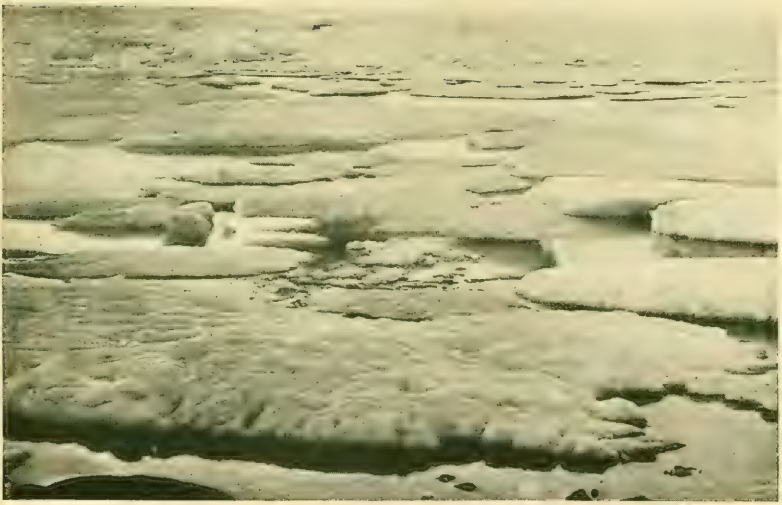
Ole's journey and mine was for pleasure and to pick up such incidental information as came in our way. We traveled so light that our three pack dogs were able to carry everything, and we wandered from hilltop to hilltop, enjoying the scenery, examining the ancient camp sites and killing a fat caribou whenever necessary. This combined the freedom from care of a picnic with the fascination of exploration, for, except for Storkerson's excursion and mine some weeks earlier we were the first white men who had been in the interior of Banks Island. On the southwest side the American whalers are known to have made two landings but they never went beyond the beach, and the Eskimos whom they sent ashore to hunt did not go over four or five miles inland, for I have talked with them about it. It does not appear from McClure's records that in the two years which he spent at the Bay of Mercy on the northeast side of the island any of his men made journeys into the interior.

Since I began to know the North its beauty, freedom and friendliness have continually grown upon me. They were there from the first but my eyes were holden and I could not see them, for even in that clear air I walked wrapped in the haze of my bringing-up. With southern feelings and an assumption of the inferiority of that which is different, I failed to see the resources and values where they lay before me, and distrusted everything that was strange. Especially on such delightful and care-free journeys as we were now making it is difficult to realize that this land is not only assumed to be barren by those who do not know it, but has actually appeared so to men who have been there. Certainly it would take keen eyes to read between the lines of McClure's narrative of hardship and heroism the soft beauty and homelikeness of Banks Island as I see it.

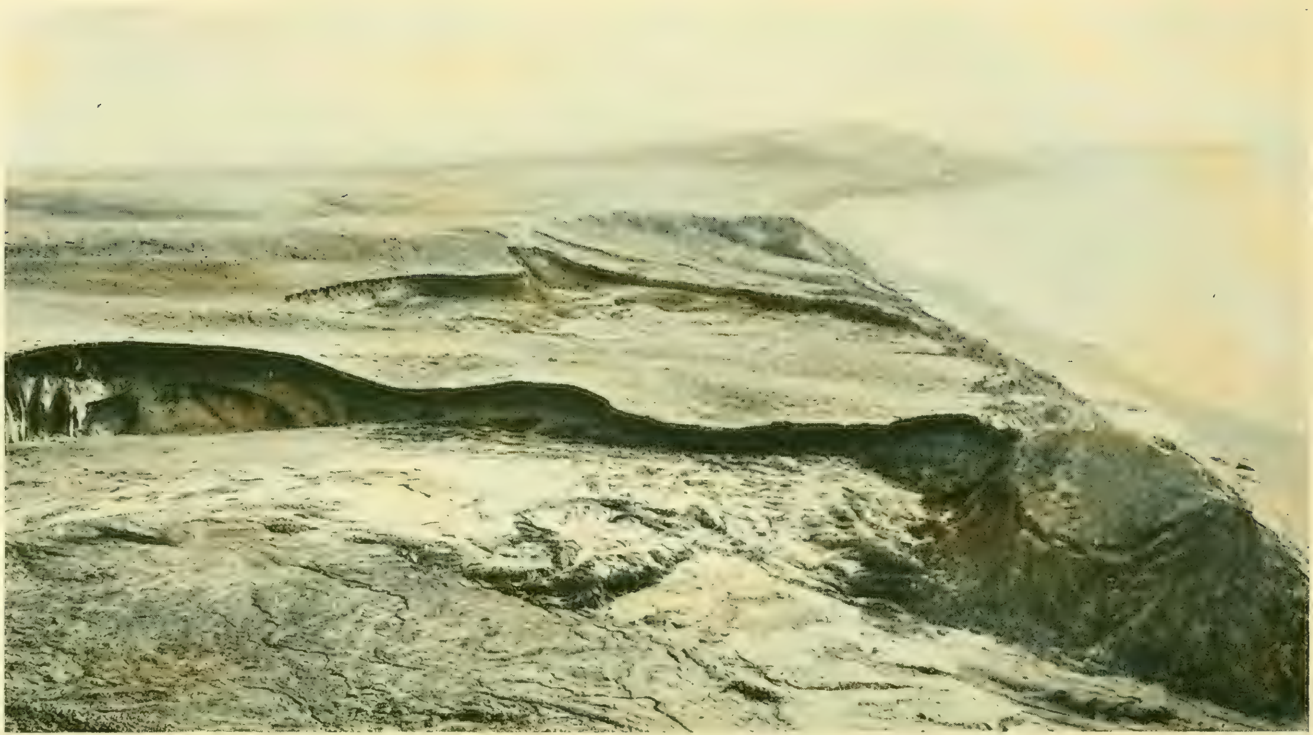
When we had wandered around until we thought Storkerson might be getting lonesome, for he was unlike Ole, not used to living alone, we made our way back and found him and everything well, except that he was a little stiff from lying around the house in idleness. The trouble had been that he could not very well leave camp because of the hovering wolves. So long as a man is present a camp is in no danger from them, but unguarded it is at their mercy, whether there are dogs or not. For one thing, the dogs would not have the sense to stay in the camp and attempt to guard it, but



A Tent Ring.



Broken Summer Ice Along the Coast.



THE *North Star* COULD FOLLOW THE SHORE WATER WHEN A LARGER SHIP COULD NOT MOVE would probably give chase to the wolves, and in a fight there could be no doubt of the outcome. The dogs were about the same size as wolves, weighing up to 130 pounds, but they had neither their swiftness of foot nor their cunning. Wolves would not allow themselves to be overtaken unless they were numerous enough to get the best of the fight.

To show what was most in our minds all through August, I quote my diary for the first day of that month:

"This is probably the month of keenest expectations of all I have spent in the North. It is the season of navigation and our three small ships should be, with luck, as far east now as Cape Bathurst. The *Star* coming direct may arrive here any day the ice leaves the beach. She should reach Kellett in a few days from now and wait her chance there to proceed north. The *Sachs* should complete her errand accompanying Anderson to Liston Island and be at Kellett, too, soon after August 10th. The *Alaska* almost certainly will have little trouble in reaching Cape Bexley if once she gets to Herschel Island. Even the *Karluk* may be heard from. There is nothing in the present or future I would not give to be aboard of her, and few things I would not give for news of her—nothing I would not pay for her safety, or rather that of her men. The vessel herself would not so much matter if nothing but hopes, plans and equipment went down with her."

On our inland journey Ole and I had watched the weather, prepared to make rapidly for the coast should the wind lead us to think the ice might leave. The camp where we rejoined Storkerson was on a hill so high and commanding that although fifteen miles inland it allowed through glasses a view of the ice along the coast and around Bernard and Norway Islands.

Now we spent much of every day scrutinizing the coast, watching the gradually widening lane of shore water between the mainland and the grounded sea ice that was being melted by the warm water pouring from the land. It was one of the virtues of the *Star* that on account of her shallow draft she would be able to work her way up along this lane of thaw water even before the ice offshore broke up and was carried to sea by the wind. Once or twice near the middle of the month there was a slight shifting of the ice but the tide fell and grounded it again. But towards the close it became clear that although there was a ribbon of ice in the middle distance the ocean outside was clear. Strong winds blew from the east day after day, making it evident that no floating ice could be near, although the fogs that always hang to seaward when a land wind is blowing prevented us from seeing beyond the limits of the grounded ice.

On the southwest coast of Banks Island between Nelson Head and Cape Kellett there is deep water inshore, and even in winter the ice is carried away from the land by any offshore wind. But north of Kellett there is a shelf of shallow water along the land that grows wider as you go north until towards the middle of Banks Island it is twelve or fifteen miles wide. In the vicinity of Norway Island the shelf becomes that much broader, so that it extends fifteen or more miles beyond. On all this shelf there was the grounded ice that we speak of as "landfast." The *Star* might even make her way north between it and the land, but we knew that any ship could sail north outside of it.

Towards the end of August navigation conditions had become so good that we began to despair of the *Star's* coming. It seemed then that only shipwreck or some condition almost equally serious other than that of ice must be keeping her away. I really made up my mind to this about the 18th of August and we were about to start south along the west coast, thinking she might be wrecked somewhere between us and Kellett, when we had an unaccountable change of heart and decided to wait another week. By the 27th there was no use waiting further, so we dug a huge pit in the earth, lined it with stones, filled it with stores of dried meat, caribou tallow and caribou skins, and covered it with stones which would secure it from any animal except a polar bear. Not having seen a single bear since landing, we thought the cache might prove safe till we came back for it.

Now the plan was to follow the coast south to Kellett, searching every bay for the *Star* or possible traces of her. If none were found we would return to our cache and stay through early winter until the ample daylight of February or early March. We talked about starting then for the mainland, going first east into Victoria Island, then south through the country so well known to me from my previous expedition, across Coronation Gulf to Bear Lake. Privately I had in my mind the hope that we might get through the winter so well that my companions would in the spring be willing to make a second ice exploration, in which case the calculation would be to get to the mainland in May or June.

We started along the coast southward on September 1st. The method of travel was that Storkerson and Ole followed behind with the camp equipment and food for three or four days, carried mostly by the dogs, although the men carried the bulkiest bedding.

In the morning after breakfast while they were arranging the dog packs and making ready for the march, I would start out with the aim of keeping three or four miles ahead of them all day. I traveled from hilltop to hilltop making little temporary monuments and leaving messages for them in case I had seen through my glasses anything on the basis of which any plan ought to be changed. It might be that I could see a bay running inland ahead of us, and my message would give warning and direct the course. Or I might see game, in which event the note would tell them whether to wait and watch until they saw the outcome of my hunting, or to make camp at some specified spot, or perhaps to go ahead to some other hill from which they could watch the hunting operations better. For several days no game was seen, nor were we in need of any, for we had started with dried meat enough for five or six days.

I was able to travel much faster than the others, for heavily laden pack dogs will walk only about a mile and a half an hour. When no hunting was on I did such things as sketch an outline of the coast. Now and then I went down to the beach, following it for a mile or two at a time and sticking up on end any small pieces of driftwood found, the idea being that they would thus be more easily discoverable above the snow next winter should we have occasion to follow the coast by sled.

The Admiralty chart proved rather inaccurate, as it had been made on the basis of observations from McClure's ship sailing along several miles from the land on its way north in 1851. Investigations since made at my request by the Royal Geographical Society indicate that some of this map was based not on any survey or sketches made at the time, but on log book entries, narratives, or possibly even the memoirs of men who were on the journey. Nothing more than a very general correspondence between the facts and such a map can be expected.

There are several islands along the coast although only one, Terror Island, is shown on McClure's chart. On the map the coastline is undulating, without deep bays or harbors; on the real land there are many deep bays and many harbors, if their entrances prove adequate when sounded. I am inclined to think, from the evidence of driftwood on the beach, that during the last short while, geologically speaking, the coast has been rising; but that before that there must have been a long period of considerable subsidence and there are, accordingly, long arms of the sea stretching inland through "drowned" valleys. Relying on the map, we tried for the first few days to follow the coast pretty closely, thinking there would be no deep bays or hindrances to travel, but we lost so much time this way that later we traveled on an average five miles away from the coast. Even then we would come occasionally to what we expected to be a creek, and which had all the winding characteristics of a creek, but was an arm of the sea reaching in some cases six or eight miles inland.

About half-way to Cape Kellett I had a curious experience with a band of caribou. Each of several times I got near them they were unaccountably scared away. This puzzled me, when the explanation appeared in a polar bear. I don't know exactly what he was doing. Part of the time he was probably following me, part of the time he may have been preparing to hunt caribou on his own account, and eventually he was fleeing from me after having got my wind. But in each case he succeeded equally in scaring the caribou. When I finally noticed the bear I tried to get him, but he was aware of me and made off without stopping. The caribou that time ran into my companions and the dogs, which excited the dogs to loud barking and scared them again. To make matters worse, Storkerson did not realize that I was following the caribou and started following them on his own account, which scared them once more. There was nothing to do now they were so thoroughly frightened but to wait for hours until they had not only run a distance of several miles but had had time to quiet down and more or less forget.

They finally stopped on some rather flat land, and approaching them was a tedious matter, entailing a great deal of crawling and a great deal of waiting in strategic positions for them either to move closer to me or else to move over a hill so that I could resume my devious approach, for this was the last day of our dried meat and we had to get something to eat. I eventually shot four, after having used up nearly a whole day. This was more meat than we needed, but game had been so scarce on the way south that I thought it best to kill enough for a depot for the return journey. So we dug a hole in the ground, lined it with stones as usual, and filled it with meat that had first been properly chilled.

Part of the land traversed in the last several days had been sandy, and "heather" does not grow well on sandy soil, or rather, what grows there does not burn well. But it is one of the compensations of the Arctic that the same sandy soil that makes the heather unsuited for fuel seems especially adapted to a certain kind of willow, the dead and bleaching roots of which we always found in these sandy districts in sufficient quantity for cooking. Once or twice we descended to the seacoast for our evening camp and were able to find driftwood.

About the middle of the west coast of Banks Island the Admiralty chart indicates Terror Island, a conspicuous little island which we found in its proper latitude. But just north of it the chart shows a straight coast line, and here we found a great bay about fifteen miles across and running fifteen miles or more into the land. I have named it Storkerson Bay in honor of the man who did more than any other member of the expedition towards the success of its geographic work.

South of Storkerson Bay the amount of driftwood on the coast increased rapidly and in one bay a little to the south there must have been several cords of wood to one mile of beach. This would be little for the mainland coast near the Mackenzie delta, where there are thousands of cords to the mile in some places, but it is more driftwood than we found anywhere else on Banks Island.

Towards evening on September 10th I climbed a commanding hill and recognized that a few miles south lay the sandspit of Cape Kellett. Except for Point Barrow at the north tip of Alaska, this is the greatest sandspit known to me in the Arctic. It is shaped about like a fish-hook. It first runs four or five miles west from the southwest corner of the land proper and then it bends gradually northwest, north, northeast, east and southeast in a two-mile curve, forming what looks like a safe harbor, although it has an unsafe entrance because of shoals, is swept with currents carrying ice at certain seasons, and is not a safe harbor at all.

The recognition of the indubitable outline of Cape Kellett was followed by a quarter of an hour of suspense while my glasses searched all the vicinity from the hilltop, first hastily for the possible presence of a ship, and later minutely for a beacon or other sign that some one had been there who had an interest in us. Nothing could be seen that resembled any work of man.

I felt truly depressed as I went about the erection of a beacon for the guidance of my companions who were four or five miles behind. It happened that on top of this hill there were some "nigger heads" scattered about, which, as we have explained, is the material used by Eskimos in building the foundations for their summer camps. Because that material was abundant, I erected in half an hour a beacon that could be seen with the naked eye from five or six miles. I left in it a note saying nothing about disappointment, for I knew my companions capable of inferring that for themselves. It said merely, "Make camp on the coast half a mile southwest of here."

Then I walked east along a ridge of hills half a mile, for our meat supply was again beginning to run low and it was time to get another caribou, and I had further a vague plan of remaining at the Cape for three or four days. From the end of the ridge I had a view over a beautiful valley running eastward, with great stretches of flat bottom lands and rolling grassy hills on either side. On a hilltop eight or ten miles to the northeast were some caribou, too far away for present need but giving assurance that, should we decide to stay in the vicinity, we were likely to find food here no less than elsewhere.

On my return to camp I found the gloom I had expected. We had all felt fairly certain of finding at least some beacon at Cape Kellett. There was the hope of our own ships. Also Mr. Mott of the *Polar Bear* had said to me that in the event of my ships disobeying orders and not coming to Banks Island, which he anticipated more strongly than I through his association with the expedition during the winter, he would leave a depot for me at Kellett. We had even agreed what it was to be—one or two rifles with ammunition to fit, some kerosene with two or three blue-flame kerosene stoves, a tent and possibly some clothes, and a little of some kind of food least likely to be destroyed by bears. The food part I had told him was of small importance, but I now felt keenly how convenient it would have been to find rifles, ammunition, oil, and the like. But the moral effect of the slightest evidence that we had not been forgotten would have been greater than the physical value of any supplies we could have found.

It is scarcely possible for healthy men living in the open air to remain despondent long. After an hour or two of gloom I began to see various romantic possibilities in the situation and launched upon a sermon to my companions on the text that the most precious use of adversity is its stimulus. I pointed out that the greater the obstacle the greater the achievement, with various other platitudes I have now forgotten. While we lacked many things we could have made use of, we nevertheless had resources enough not only to pass the winter safely but to make an exploratory journey in the spring, if it were nothing more than to cross to Victoria Island and finish the mapping of it between the farthest points attained by the expeditions of McClure and of Amundsen. Thus we should accomplish useful geographic work and knock in the head, if we had not already done so, the idea that ships and supplies are needed to pass an arctic winter safely and comfortably. There would soon be on the ground plenty of snow for the building of clean and cozy houses, and we still had over 200 cartridges, which meant 20,000 pounds of fat for fuel and meat for food.

But Storkerson had a family on the mainland, and Ole had plans for a trading expedition involving the purchase of a ship and the acquiring of wealth on the coast of Siberia. While they agreed with me that we could pass the winter and continue the work in the spring, they did not agree with me that the game was worth the candle, and reminded me that I had promised them when we were out on the ice that if no ship came to Banks Island we would make our way to the mainland as soon as the winter frosts should bridge over the arms of the sea we had to cross, and as soon as the increasing daylight of spring allowed safe travel.

## CHAPTER XXVI

### WE DISCOVER THE MARY SACHS

NEXT morning we decided to go down to the Cape itself and a few miles beyond it before giving up finally the hope of finding ship, beacon, or message. As usual, I started off ahead. When I had gone a mile and a half I saw in the soft mud on the bank of a little creek a nearly fresh human footprint. I had scarcely realized its meaning when my mind went back with some irony to the previous evening and to the moral value of the decision we had failed to make. Had we taken a bold concerted stand to continue for another year on the resources we had, we could have been proud ever after of a "heroic" resolve, without having had the bother of carrying it out. For this footprint meant that somewhere in the vicinity resources of one kind or another were awaiting us.

I was near enough to the camp to be able to wave a signal. And then I did not stop to write a note but merely raised a stone on end, for I knew the footprint itself would carry as much of a message to Storkerson and Ole as it did to me. To me it was one of the gladdest sights of my life. That it was the imprint of a heeled boot meant white men. Half a mile farther south I came upon a second track. This showed cross-hatching on the sole—the sort of rubber boot privately owned by some of the members of our scientific staff. This increased the probability that whoever had been here, it was one of our ships that brought him. At first I had thought it most likely to have been the *Polar Bear* party who had promised to come if our ships failed.

Three miles farther on, where the sandspit of Cape Kellett joins the mainland proper, I found no signs though I looked carefully. "But a mile or more east along the coast," to quote verbatim from the diary for September 11th, "I got to the top of a hill from which I saw the tips of two masts. I could hardly believe my eyes—somehow it seemed unnatural to find a ship in Banks Island where it ought to be."

I ran forward, for the first thing that occurred to me was that the ship was at anchor and might start away. Half a mile of running brought me in full view of the beach, and to my surprise and consternation I recognized that there was the *Sachs* hauled up on the land, her cargo unloaded and a number of her men building a house. And now I walked slowly to get my breath back, puzzling what could have happened to the *Star* that she had not come and why the *Sachs* was on the land instead of afloat. Obviously, there had been no shipwreck. Everything was too trim and orderly for that.

As I approached, the men at work glanced in my direction occasionally but were apparently not impressed with anything peculiar in my appearance. This I understood. It meant that some of the party were off hunting and that they imagined me to be one of their own people coming home. As I got nearer I recognized Jim Crawford carrying sod. From the time I was 200 yards from the camp till I was fifty yards from it, Captain Bernard was in full sight and glanced occasionally at me. Then he turned his back on me and walked slowly away towards the ship. I was no more than ten or fifteen yards from Crawford when he looked up for the third or fourth time and at last recognized that I was not one of his own party. I have forgotten what it was he had in his hands just then, but he dropped it. He has told me since that he first thought I was one of their own hunters. When he saw that I was not, his impression was a confused sort of astonishment, for he thought I must be an Eskimo and still he could not see what kind of Eskimo I could be. He had heard that the Victoria Island Eskimos were different from the Eskimos he knew in Alaska, but he had also seen specimens of the Victoria Island clothing and my clothes were of the Alaska type. Furthermore, he knew they had only bows and arrows, and I was carrying a gun. The contradiction of everything he expected confused him hopelessly. It was not until I spoke to him and told him who I was that he recognized me. Even then he stood still and speechless in a daze.

A few seconds later the company became as excited, however, as any one could have desired, for when Crawford finally realized who I was, he turned and shouted to Bernard: "Stefansson is alive! He's here!"

This announcement carried greater conviction to Bernard when pronounced by Crawford than my statement of who I was had carried to Crawford when pronounced by myself. The rest of the party were around me in a moment. But it naturally took some time before I for my part began to realize under what circumstances they were there and before they had adjusted themselves to the fact of my presence. I had expected them to be more pleased than surprised when they recognized me, and certainly I had not expected the kind of surprise I found. I thought they had come there to meet me and that they would be delighted once the meeting had taken place. On that theory I could not interpret their behavior, although it was easily understandable when I realized that they had come there with no idea of my being alive at all but merely governed by a blind devotion to the orders of a man now dead.

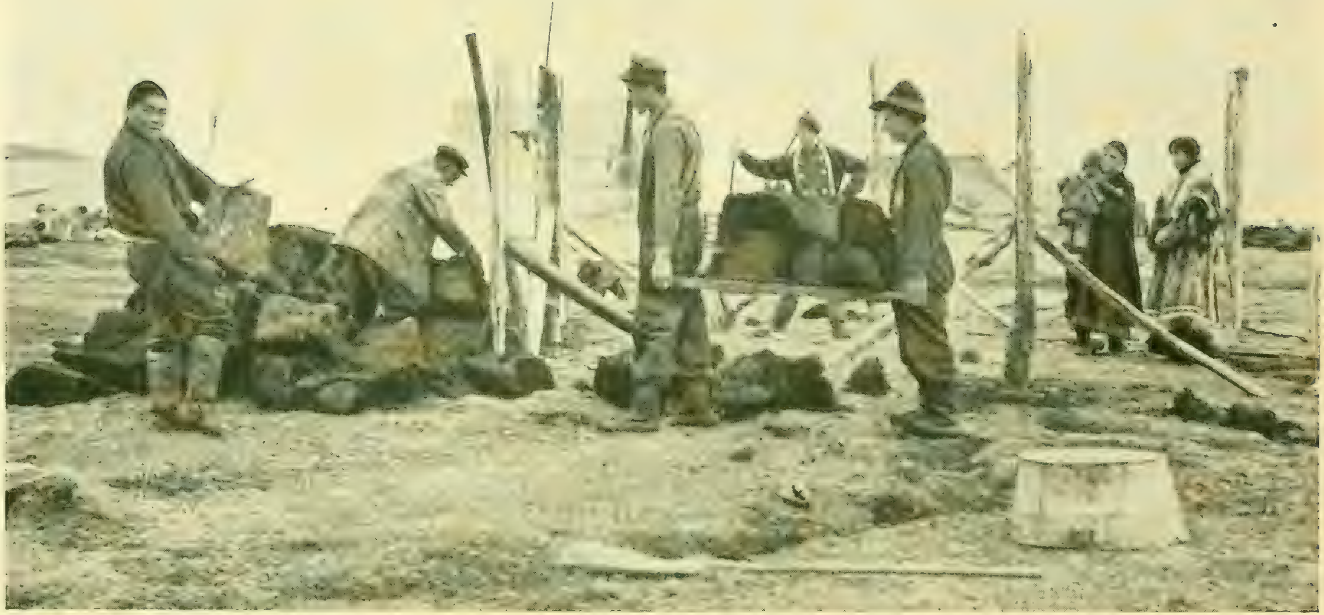
After a few words of explanation from me, indicating that Storkerson and Ole were coming behind, Crawford and Thomsen set out to meet them, while Bernard took me into a tent, insisting that I must eat. Somehow his first clear notion after he realized that I was alive was the assumption that I must be starving. I stopped him at that point and insisted on his looking closely at me and seeing for himself that I was fatter and in better condition than he had ever seen me before. He admitted it presently, but insisted that I must, nevertheless, be craving "good grub." The Captain was a great coffee drinker and could not understand how anybody could go months without coffee. Bread, too, he considered a necessity of life, and fruits and various other articles of food he supposed to be by their nature such that no one could be healthy without them. He thought that any one deprived of these things for months would long for them with a craving indescribable. I tried to explain to the Captain that while I was hungry for news I had very little appetite for his food, but I soon found that it was easiest to accept a mug of coffee and some bread and butter and commence nibbling and sipping. My doing so put the Captain at his ease and he began to tell me the things I most wanted to know.

He had hardly started when the one member of the company who had not been present at my arrival entered the door. This was my old friend, W. J. Baur, whom I had known since 1906 under the name of "Levi," though he is no Hebrew by blood nor has he any trait supposed to be characteristically Jewish. I had seen Levi last when he had come from the *Belvedere* to bid us good-by when we started out on the ice from Martin Point, and here he was now steward of the *Sachs* and at the moment returned from a successful duck hunt, with a shotgun in one hand and two or three birds in the other. He was familiar with the "blond Eskimos;" in fact, he had wintered among them in 1908 on the second whaling ship to visit them, and that was two years before I saw them and

On Arrival at Kellett.

Storker Storkerson.

Ole Andreasen.



BUILDING THE SODHOUSE AT CAPE KELLETT.

Natkusiak Bernard Crawford Baur Thomsen Mrs. Storkerson Mrs. Thomsen four years before they became the delight of newspaper readers. He has told me since that his first thought was that here was one of the blond Eskimos, but his second thought was that he'd be damned if he knew who or what I was. He was no farther along in his thinking process when Captain Bernard said, "Don't you see it's the Commander?"

It is seldom in real life that people "register" astonishment or any other feeling in a way at all resembling the movies, but I have never seen nor can I imagine better movie acting than Levi's astonishment. He had already put the gun aside, otherwise he would have dropped it; but the ducks in his hand he actually dropped on the floor. After staring at me he almost collapsed upon a bench without saying a word. I have heard of people's eyes "sticking out of their heads" with fear or surprise. Without saying that Levi's actually did, I will say it seemed to me they did.

There was a special reason for Levi's being rather more startled than the others. He had been on the expedition their guide and philosopher as to all northern things. He had been a whaler around Herschel Island and in various parts of the Arctic for twenty years and was looked up to by members of the *Sachs* party as wise beyond any of them. They all knew, each on his own account, that my companions and I must be dead; but even at that, Levi had taken frequent occasion to explain and enlarge upon the certainty. He was in truth, as he said himself, an old friend of mine; but he had seen no reason why affection or any weakness should blind him to facts. In addition to explaining that it was not possible we could ever have reached Banks Island alive, he had also explained that we could not have lived there even had we been able to land. He had warned that it was "all storybook stuff" about any white man being able to live in the Arctic, and especially on Banks Island, without help from Eskimos. Even the Eskimos could not live on Banks Island, for had he not himself years before seen traces of them there and were they not absent now, and had they not always been absent when anybody came to the island? These Eskimos had come on a furtive visit from another island (Victoria Island) and had not stayed because the country was a difficult one even for them.

Of course this was ordinary whaler lore, partly intuition and partly picked up from the Alaska Eskimos whom they carry in their crews; but it amounted to a body of truth with Levi and the crew of the *Sachs*, with the partial exception of Wilkins, as we shall see later. But the broadest-minded scientist was never more willing to accept the verdict of facts against a theory than was Levi, so obviously glad was he to have been wrong at the price of finding us alive.

The first thing I asked Captain Bernard for was a list of those who had come with the *Sachs* to Banks Island. They were George Wilkins, in command; Peter Bernard, sailing master; James R. Crawford, engineer; W. J. ("Levi") Baur, steward; Charles (really Karl) Thomsen; Natkusiak; Mrs. S. T. Storkerson with her daughter Martina; and Mrs. Charles Thomsen with her daughter Annie. Martina was about five years old and Annie about three.

When I found Levi here in place of Andre Norem, there flew to my mind Norem's fears for his own sanity and I asked about him. Bernard's reply was brief, I remember it almost word for word still: "Poor Norem. He was a fine fellow. I had known him for years and so it was no credit to me that I believed him when he told me his mind was going. I could see the signs plainer than he could. But there were still one or two men left at Collinson Point who thought he was shamming, when one morning he shot himself in the alleyway outside our door and was dead before any one got to him." This was the first tragedy of our expedition to come to my ears.

I now turned my inquiry to what had been an anxious burden on my mind. There was reassuring news of the *Karluk*. Some whaling ships had reached Herschel Island, the Captain said, before the *Sachs* left there and had reported that the *Karluk* was crushed by the ice sixty miles northeast of Wrangel Island in January, 1914, and that all of her men had made their way safely ashore in Wrangel Island; that Captain Bartlett had left them there and with one Eskimo companion had crossed the hundred miles of ice to the mainland of Siberia, had traveled along the coast from house to house until he met Baron Kleist, a Russian official, who had taken him to Emma Harbor, where Captain Theodore Pedersen * of the *Herman* had picked him up, carrying him to St. Michaels. From there the news was sent to the Government and to the press. The United States was said to have detailed two revenue cutters, the *Bear* and the *Thetis*, to pick the men up in Wrangel Island, and the Russian government two ice breakers, the *Taimyr* and the *Vaigatch*, for the same service. There seemed to be no doubt that while the ship was lost to our expedition, her company of men were safe.

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* Captain Pedersen is Theodore among his friends; he is in this book sometimes referred to by his legally correct name of C. T. Pedersen.

This piece of news set my mind at rest; the reported outcome was exactly according to my expectations. I had said in my reports to the Government that while the ship had no more than an even chance of surviving I did not see any reason to think that any of her men would be lost if she were crushed in the ice in winter and especially if she were crushed after the New Year, when the daylight was increasing and the conditions were ideal for getting ashore. The only thing that surprised me was that the men should have been left on Wrangel Island. It appeared to me that they should have walked ashore at the same time that Captain Bartlett did, for it is well known that that coast is thickly settled with people who have an abundance of native food in addition to stores of groceries brought in by traders and could care adequately for almost any number of shipwrecked men that might arrive. A hundred miles over ordinary arctic sea ice is not far to walk.

I have here given the news as reported to me by Captain Bernard, and the feeling I then had about the news. It was to develop later that the news itself was in part incorrect.

I next asked why the *Star* had failed to come to Banks Island. To this Captain Bernard replied that everyone in Alaska, Eskimos, whalers and members of our expedition alike, had been sure of our death. He said Dr. Anderson had not taken him into his confidence, but he thought our supposed death might have been the reason why he had decided not to follow my instructions about the *Star* and had taken her himself to Coronation Gulf. I asked if Dr. Anderson had sent me any message on the chance of my being alive. He had not, nor any report or letter explaining why he had disobeyed my orders.

So ended our dreams of the *Star,* of what she was to do for us and of what we might be able to do with her. With characteristic fondness for speculating over what might have been, I thought a good deal that day and I have thought a good deal since, of what we might have accomplished with her had she not been taken elsewhere.

It seemed that in accordance with my instructions Wilkins had at first taken command of the *Star,* with Aarnout Castel as sailing master and himself as engineer. Wilkins had intended to bring me to Norway Island my former traveling companion, Natkusiak, and some other Eskimos, including at least one seamstress. The spring had been a fairly early one and the *Star* made her way successfully to Herschel Island. Here, as misfortune would have it, Wilkins made a decision, wise in itself, of waiting a few days till the mail came down the Mackenzie River, so that he could carry the mail to Banks Island and especially so that he could secure the chronometer watches and other scientific equipment which I had asked the Government to send by way of the Mackenzie, expecting them to be picked up just as Wilkins was doing. But while he waited for the mail he incidentally waited so long that he was overtaken by the *Alaska* and *Sachs* coming from Collinson Point.

Wilkins' point of view now was one with which, in spite of my great admiration for him in general, I never could agree. It seemed to me that as he had his orders from the commanding officer direct he should have obeyed them irrespective of countermanding orders from any officer of inferior rank. The theory he acted on was that my death had removed me from the situation and that Dr. Anderson was the actual commander and his orders should take precedence, mine being as it were canceled by an assumption of my death. Dr. Anderson now told Wilkins that he had decided not to let the *Star* go to the Norway Island rendezvous but would take her to Coronation Gulf instead. For reasons which he gave, he would transfer Wilkins to the *Sachs*.

The reason for the transfer had been the assertion that the *Sachs* was better for sending to Banks Island because she was the bigger ship. This was canceling my judgment as well as my orders, for if I had thought so I should have arranged it that way. The supposition that the *Sachs* was better than the *Star* was tenable only if the chances of meeting ice were ignored, and obviously the chances of meeting ice around Banks Island were much greater than of meeting it in the direction towards Coronation Gulf. The reader will recall how the *Star* was purchased especially for the Banks Island trip, and how the *Sachs*, through her twin propellers, was particularly badly suited to those more northerly and icy waters.

Wilkins had transferred to the *Sachs*, taking Natkusiak with him, and the *Sachs* had come to Banks Island. But on the way one of her propellers struck a cake of ice, as was to be expected, and was broken off. She had also been insufficiently caulked before leaving winter quarters and was leaking heavily. When she got to Kellett she found considerable ice along the sandspit and Wilkins decided to haul her ashore in the last week of August for the following reasons:

First, she was leaking so fast that she had to be pumped forty minutes out of every hour; second, she was under one propeller and hence very difficult to maneuver, and her speed had been cut to two miles per hour as against six; and third, it was not believed that I was alive. Even under this last head Wilkins had been prepared to go ahead to Norway Island had the ocean been open, be I alive or dead; but in view of the disabilities of the ship and in view of the ice at Cape Kellett, the consideration that he did not expect to find me alive, anyway, weighed heavily with him. There was also the pressure exerted by the opinions of the crew. Levi had explained that any ship going north beyond Kellett would be in grave danger of being unable to get out of the country again the following year, and as they were provisioned for one year only and had orders from Dr. Anderson to stay but one year, they considered it unwise to go on.

But at Kellett they knew of no harbor in which a ship would be safe, although we have since found a good one for a boat of her draught two or three miles east of where she was actually hauled out. Not knowing of this harbor, they saw no way to keep her safe except to haul her out on the beach. They accordingly unloaded her, put her broadside against the land, got out their ropes and tackle and hauled her up. There she was when I found her, rather a house than a ship, for it was impossible to launch her without beams to slide her back into the water. These beams she did not have and they could not be obtained on Banks Island.

A tale of minor importance told by Captain Bernard was that Peder Pedersen, whom I had engaged as engineer for the launch *Edna*, had been unable to run her during the summer and that this had greatly handicapped Chipman in his survey work of the Mackenzie Delta. Chipman, failing to get any use of the launch, had carried on his work as best he could with a whale boat and had, after the delta survey had come to an end, towed the *Edna* behind the whale boat to Herschel Island. Here she met the competent engineers of our ships, Jim Crawford of the *Sachs*, and Daniel Blue of the *Alaska*, who in two or three hours put her into good shape. Dr. Anderson, having decided to take the *Star* to Coronation Gulf, gave the *Edna* to Wilkins who, not knowing Banks Island conditions, thought she would be worth taking along. Where the *Edna* could have been valuable was in the eastern work she had been bought for, although the *Star* was of course better. Coronation Gulf is free from ice most summers and is full of islands, an ideal place for a power launch. But in Banks Island there is so much ice on the west coast that only under rare circumstances can a launch be useful; and while it might be well enough to carry such a boat on a big ship where she could be hoisted in davits, she was nothing but a white elephant to the *Sachs*, which was too small to handle her comfortably on deck. The *Edna* had been towed part of the way and nearly wrecked by ice; then with the greatest difficulty they had managed to lift her up on the decks of the *Sachs*.

We might have made some use now of the *Edna* if she had been in seaworthy condition. I put Crawford at fixing her up, but it was eight or ten days before she was ready for use. By that time the frosts had set in and the season of navigation was over.

Two new chronometer watches had been sent to me by the Government down the Mackenzie and had arrived before the *Sachs* sailed. One of these had been taken for O'Neill to replace the watch he had turned over to me, but Wilkins had been given the other, so we now had two good pocket chronometers. A battery of three Waltham ship's chronometers, really huge watches mounted in gimbals, had also been given the *Sachs*, and various small items of scientific equipment from the *Alaska*.

But there were three exceedingly serious gaps in our equipment.

A special feature of our ice exploration was the large waterproof tarpaulin used to convert our sleds into boats. Of the two the expedition possessed we had already used one for the trip from Martin Point to Banks Island, and it was nearly worn out. The other I had expected would be brought by the *Star*. It had been taken to Coronation Gulf to be used for spreading over stores to keep the rain out.

The specially strong sled which we had lost with Wilkins and Castel had also been taken to Coronation Gulf. Lighter sledges of the sort best suited to work on or near land had been sent us instead.

Why the tarpaulin and the sled had not been sent us I understood in a measure, though not fully. What I never understood was that the *Alaska* had miles of sounding wire and sent us none of it. This was truly heartbreaking. We should have to make our ocean exploration next spring over depths inevitably beyond the reach of our 1386 metre line, and thus our journey would be robbed of half its scientific value.

An answer to all these things would be: "We thought Stefansson was dead, and expected Wilkins to confine his activities to the shores of Banks Island where the boat tarpaulin, the strong sled, and the sounding wire would be needed no more than by us in Coronation Gulf."

Apart from the relief of being told of the safety of the *Karluk's* men, it was rather depressing news the *Sachs* had brought us. Evidently our task of exploring the ocean to the west and north of Prince Patrick Island was going to be difficult, both because of the gaps in our equipment and because of the too southerly base at Kellett.

But to this cloud there was the silver lining that the southern section of the expedition was, so far as I could judge from the news, in an excellent position to do good work. I hoped so then, and later events fully justified the hope. The competent specialists of that section secured during the next two years a fund of information and a mass of specimens such that had we achieved no other scientific results than those gathered by the complement of the *Alaska*, the expedition could be considered to have added materially to the sum of knowledge.*

While I have mentioned both Wilkins and Natkusiak, I have said nothing about meeting them. This is because they were not at home when I arrived, but were the hunters who were away and for one of whom I was mistaken when I was seen coming down the hillside towards the camp. They had gone to the northeast looking for caribou two or three days before. We planned to send somebody in the morning to look for them and bring them back. Meantime Wilkins had got track of us on his own account, a story that I am enabled to let him tell for himself, since he has written a magazine article on the incident from which I may quote. After telling how the *Sachs* was forced to decide against trying to get north beyond Cape Kellett and how they first landed there, he goes on:

"We saw no trace of game on the land, and finding no trace of Stefansson we were fully convinced that even had he reached the land he must have starved to death. After waiting in vain for the ice to move we decided to establish winter quarters and search the coast for his dead body or possible traces of him, when conditions would permit sledge travel. There was not sufficient snow on the ground to travel along the coast, so with an Eskimo companion who had been with Stefansson on most of his arctic journeys I went inland afoot. We hunted for two days without success and at night we discussed our leader's fate.

"There were many reasons why he could not be alive. He had not come ashore in Alaska. We thought he could not get food on the ice; he could not travel to Banks Island against the wind and drift, and even if he had reached Banks Island, he must surely have starved to death. Natkusiak, the Eskimo, explained that Stefansson had recently developed many unusual ideas. When he first knew him he was like the other white men, but lately Stefansson had been getting so he wanted to do many things that other white men never did. All the Eskimos knew that a man cannot go far out on the sea ice and live, and now Stefansson's death had proved it. He thought that it would be the last time, as it was the first, that any one would try to do anything so foolish. We went to bed mourning the loss of our leader, but feeling that we had always known that he would not succeed.

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* For a summary of the scientific results of the *Alaska* section, see Appendix.

"The third morning we started out early, determined to stay out all day and all night in a final effort to find some game. I walked a mile or two from our camp, and then from a hilltop I saw a beacon in the distance that I had not noticed the day before. I examined it with my glasses and thought as it was near the coast that it might be an old one erected by somebody from a passing whaling ship. But I was almost sure it had not been there the day before. Then came the thought, 'Perhaps it's one that Stefansson has just erected!' and I hurried towards it. I found myself running as my hopes grew stronger. As I neared the beacon I could see that it was a new one built of sod. Could it be that Stefansson and his party were alive? I reached the place almost breathless and found a tiny note in Stefansson's handwriting. He and at least one of his companions were alive!

"'*Make camp on the beach a quarter of a mile S. W. from here*' was all that was written on the note. But that was enough to tell me that they were alive and traveling in the direction of our boat. I hurried back to my camp, but meantime the Eskimo had gone hunting. I could not go home without him, so I waited all day and half the night. He at last returned, having been successful in killing several caribou and a polar bear.

"We made all haste to the main camp, discussing on the way the probable condition in which we should find the men. We thought of them as worn and haggard, starving and struggling on toward the camp with one last effort. In fact, I thought of them in every condition of which I had read of heroic explorers in storybooks. We reached the hut at four o'clock in the morning and I tiptoed round the sleeping quarters, not daring to wake them for fear they needed rest. Stefansson's two companions, Storker Storkerson and Ole Andreasen, were fast asleep in the bunks and were snoring roundly, but Stefansson had occupied my tent. I peeped in and saw him sleeping. In the dim light I could not judge the men's condition and decided to look at their dogs. These were fat and frisky and the whole six that left Alaska were there. I was amazed, yet not prepared for the sight of the men when the cook's breakfast shout brought them to the kitchen. All of them were fat and strong, stouter, in fact, than when we last saw them. They had with them when they left Alaska only a month's supply of food, and now five months had elapsed and they were pictures of health and strength. They told no tale of hardship, hunger, or adventure. We were almost disappointed. They had traveled eastward over the ice, shooting bears or seals when they had need for food, and had made the journey of over a thousand miles, living on the local food supply, and had never missed a meal! They had in fact completed, so far, the plans of the expedition almost in detail.

"So this was the end of the enterprise which for months I had heard condemned or deplored by Eskimos and whalers and the men of arctic experience in our expedition as 'one crazy and two deluded men going north over the sea ice to commit suicide!' "

# CHAPTER XXVII

## THE AUTUMN HUNT IN BANKS ISLAND, 1914

DOUBTLESS the average man turns to polar narratives, when he turns to them at all, with the desire and expectation of reading about suffering, heroic perseverance against formidable odds, and tragedy either actual or narrowly averted. Perhaps, then, it is partly the law of supply and demand that accounts for the general tenor of arctic books. However that may be, my main interest in the story I am telling is to "get across" to the reader the idea that if you are of ordinary health and strength, if you are young enough to be adaptable and independent enough to shake off the influence of books and belief, you can find good reason to be as content and comfortable in the North as anywhere on earth. An example to me is the fall of 1914, to which I frequently look back as a time I wish I might live over again.

To begin with, we had that all-important thing, an object for which to work. The *Sachs* had brought the news that the *Karluk* had been wrecked near Wrangel Island, that the main resources of our expedition had sunk or had been diverted beyond our reach. But it was up to us to make good in spite of that. I confess the idea of a large expedition had had in it for me less of challenge than the new conditions imposed. When you have under you many officials and more subordinates of a lower rank, it is with a commander largely a case of issuing orders, an easy but uninteresting way of bringing anything about. Now, with most of our best men and resources gone, it had become a matter of individual prowess. We had to show that by adapting ourselves unaided to local conditions a few could do the work of many.

The first point was that, although the *Sachs* had brought a certain amount of food, this wouldn't have been enough even for one winter if men and dogs had subsisted entirely on the cargo. Furthermore, as polar expeditions have proved from the earliest times down to Scott, living on ship's food brings danger of scurvy. We did not have dozens of competent and locally familiar Eskimo hunters as Peary did to send out here and there for meat of walrus or cattle or caribou, but only one Eskimo hunter, Natkusiak. And walrus and cattle are absent from Banks Island and its vicinity.

That the native resources here were less than are commonly found in the North made the task all the more absorbing. It was a question of caribou and seals, and the seals we left to the midwinter. This for two reasons: first, you can kill seals under favorable circumstances even in the twilight of winter when the sun never rises, but for caribou, where the field-glasses are as important as the rifle, daylight is necessary for any considerable success; and second, to us who have lived long in the North the lean caribou of midwinter and spring are only a food and not a very satisfactory one at that; but the fat caribou of the autumn are a delicacy.

Wilkins, Natkusiak, and I commenced the hunt at once by traveling three days northeasterly from our base at Kellett. It was snowing hard most of the time. We could not see more than a mile or two, and all caribou tracks were naturally buried. It is an idiosyncrasy with me, or possibly a matter of pride, that however abundant the food supply is in the camp from which we start upon a hunt, we seldom carry more than two or three days' provisions. We have never yet failed to get some game before the fund was gone, and it is generally good policy, for one travels more rapidly, hunts more energetically and feels a greater reward in his success when he knows that it is a matter of getting game or going hungry. It need not be imagined either, that the method is dangerous, for no one who has tried fasting can be induced to fear four or five days without food. You get no hungrier after the afternoon of the first day, and any traveler who complains about going three or four days without food will get scant sympathy from me. Having three days' provisions in the sled means that your party is good for at least ten days, before which time something is sure to turn up.

Darkness was coming on rapidly and we had to make our harvest in its season. The caribou were getting leaner and their meat less desirable. On the fourth day I asked Wilkins, then least experienced of the three of us, although he later became a first-class hunter, to stay and guard the camp while Natkusiak and I struck off in different directions through a fairly thick blizzard. The visibility of caribou in that sort of storm was under four hundred yards, but there is this compensatory advantage in a blizzard, that by real watchfulness you are practically certain to see caribou before they see you, and at a range where you can begin shooting at once. Furthermore, the wind drowns any noise you may make and the storm itself seems to make the animals less watchful. While you have small chance of finding caribou at all, yet if you do run into them you have a good chance of getting them.

We were in a country which none of us had previously seen, and there were no river-courses or landmarks that could be thoughtlessly followed with the assurance that you could with equal thoughtlessness follow them back again. In thick weather it is a matter of the closest observation and the most careful reckoning to find your way home to camp. As you advance you must notice the speed at which you are walking and the time it takes to proceed in any given direction, and must know exactly at what angle to the wind you are traveling. Furthermore, you must check the wind occasionally, either by pocket compass or by a snowdrift on the ground, to see that it isn't changing, for an unnoticed change in the wind would throw any reckoning completely out of gear. The method is first to walk around the hill—our hunting-camps are commonly on high hilltops—and study each face of it until you feel sure that if you strike any point within half a mile of camp you will recognize it on the return. When the topography of the half-mile square or so surrounding camp has been memorized, you strike out perhaps into the wind or perhaps at an angle of forty-five or ninety degrees to it, and travel straight for an hour or two hours, according to the degree of confidence you have in your ability to get back. If no game has been found, you turn at some known angle, commonly a right angle, to your original course and walk in that direction an estimated distance, perhaps as far as in the first direction. If then nothing has been found you turn again, and if this time also you make a right-angle turn, it is easy to calculate at what time you are opposite camp and one hour or two hours' walk away from it. Turning a third right angle will face you directly for camp, and if you have been careful you will land within half a mile of your mark, or within the area memorized before starting. But should you miss it you will know at any rate at what time you are close to camp, and by thinking the matter out you will see how to walk around in circles or squares of continually increasing size until you find a place you recognize.

If in the course of your walk you do see game, your first thought must be to take the time by the watch, or make some similar observation to assure yourself at that moment of the direction of your camp. If you can kill the game at that spot the matter is simple,

Meat for the Winter's Food and Skins with Heads for Museum Specimens.
Bringing Home a Load of Meat and Skins.

Hauling Ashore the Emptied *Sachs*.

Unloading at Kellett.

but if you have to follow about a good deal, or if it is a trail you come upon rather than the game itself and you follow the trail, then it is not so easy to lay down the rules for getting back. Everything can, however, be summarized by saying that you must continually memorize your course; and if you do this it is a matter of angles to determine the course you must eventually take when you start for home.

This simple outline of our procedure in a storm, and in fact at all other times when direct vision will not serve, will show at once why it is that a white man of trained mind can find his way home so frequently where an Eskimo gets lost and has to camp and wait for clear weather.

In the hunt under discussion I walked about three miles into the wind, then three miles to one side and back to camp without seeing any sign of game. But Natkusiak had better luck. Within two or three hours we knew that this must be so, otherwise he would have been back; and sure enough, just as daylight was disappearing he returned with an account of seeing about thirty caribou and killing and skinning seventeen. Wolves were very numerous at this time and we frequently saw them in bands of ten or less, and our first concern was to get the meat of these deer home. By the next evening we had more than three-quarters of it safe, although the wolves did get some. When the meat had been gathered, Natkusiak and I again hunted but in clearer weather. This time the luck was reversed; he got no deer, while I secured an entire band of twenty-three in twenty-seven shots.

It must not be supposed that killing twenty-three caribou in twenty-seven shots is remarkable. This will appear when you see how it was done. To begin with, my powerful field-glasses sighted the band at seven or eight miles. I advanced to within about a mile of them, climbed a hill much higher than the rest of the country, and used half an hour memorizing the topography. There were various small hills and hollows and creek-beds here and there, with branches in varied directions. All this could be studied from the elevation. The main difficulty was to remember the important details after you had descended into the lower country, where everything on closer view looked different. The wind was fairly steady and I made the approach from leeward. But I found when I got within half a mile of the deer that they had moved to the top of a ridge and were feeding along the top about sidewise to the wind. There was no cover by which they could be directly approached, so I went to the ridge about half a mile from them and lay down to wait. They grazed in my direction very slowly for half an hour or so, and then lay down and rested an hour and a half or more. Meantime I had nothing to do but wait. If, when they got through resting, they had decided either to descend from the ridge or reverse their course and graze back to where they came from, I should have had to make another detour and start the hunt over again. But they grazed toward me, and in another hour every one of the twenty-three was within two hundred yards and some of them within fifty yards. Caribou and other wild animals commonly fail to recognize danger in anything that is motionless, so long as they are not able to smell it. They saw me plainly, of course, just as they saw all the rest of the scenery, but their intelligence was not equal to realizing that I was something quite different.

About this season, when the lakes are freezing all around, the lake ice and even the ground itself keeps cracking with a loud, explosive noise, so caribou frequently seem to take rifle-shots for the cracking of ice and are not disturbed. I took pains to see that my first shots especially should be of the right kind. What you must guard against especially is a wound through or near the heart, for an animal shot that way will startle the herd by making a sprint of fifty to two hundred yards at top speed and then dropping, turning a somersault in falling. But he will always run in the direction he is facing when shot, so that you can control his movements by waiting to shoot until he is facing in a suitable direction. When an animal is frightened he will run toward the middle of the band, and if he is already there he will probably not run at all, at least for the moment. But caribou shot through the body back of the diaphragm will usually stand still where they are, or, after running half a dozen yards, lie down as if naturally. I therefore now did the thing that may seem cruel, but which is necessary in our work; I shot two or three animals through the body, and they lay down quietly. The shots had attracted the attention of the herd but, sounding like ice cracking, had not frightened them. Furthermore, the sight of an animal lying down is conclusive with caribou and allays their fear from almost any source. I then moved my rifle so slowly that the movement was unnoticed, and brought it to bear on the next one, holding it so near the ground that the working of the bolt in reloading was equally not noticed. After the first animals had lain down I shot two or three that were near instantly dead with neck shots, and then began to aim for the hearts of those farthest away, so that any if they ran, would run towards me. The calves were left till the last.

The very deliberation with which this sort of hunting is done, while it makes conspicuous the element of apparent cruelty, makes it the least cruel method possible in point of the pain caused the animals. A number of hunters greatly excited and blazing away in the manner of those inexperienced or afflicted with "buck fever," will mean all sorts of painful wounds that are not fatal and that may be borne for days or weeks by animals that escape. The most cruel of wounds to caribou is a broken leg, for there is no hope of recovery, and yet they can escape for the time being. I have on two or three occasions had a chance to study these animals afterward. They appear to realize that their speed, now that they have only three legs to run on, is inferior to the rest of the herd, and they are in evident and continual dread of the wolves that are sure to drag them down unless a hunter's bullet mercifully intervenes. In a properly conducted hunt by such a method as ours a wounded animal hardly ever escapes, and with our powerful rifles even a shot through the abdominal cavity will ensure death in five minutes to half an hour.

The reason for killing entire bands of caribou is conservation and convenience. If you kill them in scattered places the freighting problem becomes serious, and especially the matter of protection of the meat from wolves. But with a big kill you can camp by the meat and see that none of it gets lost. Furthermore, in islands like Banks Island, caribou are so scarce that in the ordinary fall hunts in order to get enough meat we have to kill 75 per cent. or more of all animals seen. In the fall of 1914 we had only two or three weeks of reasonably good daylight in which to get meat for all winter. For when the daylight comes again in the spring we are not only busy with exploratory work, but also the meat is lean and neither as nutritious nor half as palatable as if fall-killed.

Any one who sees charm in the life of a hunter or life in the open will need no argument to convince him that the lives of arctic hunters are interesting, but he may think they are uncomfortable enough for that to be a serious drawback. This is by no means the case, thanks to the cozy dwellings in which we spend our nights and excessively stormy days and any periods that are idle through necessity or choice.

A snow house that is essentially as comfortable as a room of the same size in an ordinary dwelling-house can be put up in fifty minutes or an hour by the method already described. They are spotlessly clean, beautifully white; they protect you so perfectly from the weather that you actually have to go outdoors to find out if it is good or bad. You are warm enough, as I have said, to sit in your shirt sleeves and as comfortable as can be.

# CHAPTER XXVIII

## MIDWINTER TRAVEL AND ITS DIFFICULTIES

LIKE all of our arctic winters, the winter of 1914-15 was spent in getting ready for the exploratory work of the coming spring. Captain Bernard occupied most of his time making sledges. Much of the material was obtained by stripping the ship of her "ginger work" to secure the hardwood and iron. Our pemmican had gone with the *Karluk*, and our steward, Baur, and others spent many hours slicing and drying beside the galley stove the meat of polar bears, seals, and caribou which the rest of us killed either at sea or on shore and brought to camp. The *Sachs* had not brought us much fuel, so that one or two men had to busy themselves continually in searching up and down the coast, under the snow, for pieces of driftwood and hauling these home, sometimes a distance of fifteen miles.

A special windfall was the discovery of a whale carcass on the beach about ten or twelve miles southeast of winter quarters. One afternoon Natkusiak and I were going down that way with a dog team, traveling about half a mile from the land through a moderately thick snowstorm. We were starting out on an extended trip meaning to be gone several days if not weeks, and we were approaching land for the purpose of finding deeper snow for making camp. We were nearing the beach and it was already so dark that rifle sights could no longer be seen for good shooting when a band of nine wolves made rapidly toward us. One's first thought must always be to look after the dog team, and as I was walking ahead I took hold of the leading dog, telling Natkusiak to upset the sled and thus prevent the team from dragging it when the wolves and the shooting got them excited. Natkusiak stepped to one side, kneeling on one knee and waiting for the wolves to come as close as they would. At about fifty yards they drew up sharp when the dogs began yelping with excitement, and Natkusiak fired at one of the two large wolves—there were evidently the parents and seven nearly grown pups. They immediately broke and ran, Natkusiak firing several times after them—we were now near a ship's stores, so ordinary rules of ammunition economy did not apply. Shooting with a rifle in half darkness must always be a matter of chance and the wolves escaped, though one left a trail of blood, perhaps the one originally fired at.

We now proceeded with both of us holding the harness of the greatly excited dogs, and about a quarter of a mile from a creek mouth where we expected to find good camping snow, a bear walked out from shore and lay down near a big cake of ice about two hundred yards from the land. Natkusiak turned the sled over on its side again and went after the bear while I restrained the dogs. I had seen one bear on top of a forty-foot cutbank and another at the foot of it about half a mile away, but I could not leave the team until Natkusiak had killed his bear. One shot did it and then I righted the sled and let the dogs make their own way to Natkusiak awaiting them beside the bear, while I turned aside to follow the ones I had seen on the land. Meantime three other bears came scampering from the shore, going past Natkusiak about three hundred yards away. He fired a dozen shots but missed on account of the darkness. As the bears were running over the ice I could see their outlines only faintly and could not see their legs at all. This meant that although Natkusiak was only about half as far from them as I he had no good chance for aiming, as he only caught glimpses of them as they appeared and disappeared between the hummocks. I followed on the land for a little way, but the snowstorm thickened and the pursuit turned hopeless.

Of course we realized that some special local thing had attracted the bears and wolves, and that it could scarcely be anything but a whale carcass. We built our snowhouse right by the dead bear, while foxes, white and ghostlike in the half dark, circled around inspecting us. We must have seen dozens, and had there been bright daylight we should probably have seen a hundred. That evening we merely skinned the bear, waiting for daylight to look for the whale.

It was not difficult to find it. About two hundred yards from the camp the snow was thick with fox tracks and there were dozens of holes where they had been burrowing through a snowdrift down to the carcass. Some of the foxes ran away when we approached, but others stood their ground at a distance and a few barked at us. We could have shot them but preferred not to injure their value as scientific specimens or as furs.

Natkusiak was in his element. Although we had been just setting out on what was intended for a long journey I changed the plans, leaving him by the carcass to watch for bears while I returned to the ship with a load of bear meat and the news of our find. That evening Thomsen went to the whale with a dog team and twenty or thirty fox traps to spend the night with Natkusiak. They divided the traps between them and set them one lot at each end of the carcass. At first they caught the foxes at the rate of eight or ten an hour, and sat up nearly all night at the work of skinning.

This whale proved of the greatest usefulness. Not only did we get a dozen or more bears in connection with it, but it furnished excellent dog feed that year and even the year following, for decay of a whale carcass lying in such a position is exceedingly slow. It was half buried in sand, but in summer continually bathed with sea water. As the temperature of the polar sea is actually below the freezing point of fresh water (often as much as 2° F. below freezing) it was not strange that decay should not be rapid, especially when one remembers that the sea water is happily impregnated with common salt and other chemicals that are bactericidal in nature and of well known efficacy in preserving meat.

With this work going on, Natkusiak and I nevertheless found time for an exploratory crossing of the south end of Banks Island. Since we made this in the darkness of midwinter, first-class geographic results were not to be expected. Our main purpose was, in fact, to pay a visit to the Eskimos whom we supposed to be wintering on the southeast corner of the island. The supposition that we should find them there was based on the verbal statements of these Eskimos themselves when in the spring of 1911 I had met them on their return from Banks Island on the ice of Prince Albert Sound.* Eskimos may be as truthful as any people, and they are; nevertheless, they give wrong impressions even to one another and to those most conversant with them because of their fatal lack of exact words for time and distance. Although the Mackenzie River Eskimos, for instance, have numerals and can count up to four hundred (twenty twenties) those of Victoria Island, Coronation Gulf, and vicinity (the Copper Eskimos) cannot count above six. They have to describe distances by such indefinite terms as "not far" or "very far," and with regard to time their vocabulary is almost equally vague. We now know that the portion of the winter spent by them on the southeast corner of Banks Island is not January, but March and April.

But not knowing it then, we devoted much of December to a

*See "My Life With the Eskimo," p. 281.

hazardous crossing of the mountains back of Nelson Head. The danger is not in the mountains themselves, although precipices are frequent, but in the darkness which makes every precipice treacherous. Because of the elevation of the land to perhaps fifteen hundred or two thousand feet, and because of the open water which prevails most winters around the south end of the island, every breath of wind that blows off the sea is converted into a cloud of fog when it strikes the colder hills. The daylight is negligible; and the moonlight, which comes to you first through clouds that are high in the sky and later through an enveloping fog, is a light which enables you to see your dog-team distinctly enough, or even a black rock a hundred yards away, but is scarcely better than no light at all upon the snow at your feet. So far as the eyes can tell, you never know whether you are going to step on a bank of snow or into an abyss.

Walking ahead of the team I used to carry a pair of large, dark-colored deerskin mittens. After throwing one of them about ten yards ahead, I would keep my eyes on it till I got within three or four yards and then throw the other, so that most of the time I could see the two black spots on the snow ahead of me separated by five or six yards of whiteness. But in falling snow or in a blizzard we used to remain in camp, sometimes two or three days at a time, unless we happened to be following a valley where, without great danger of falling, we were merely inconvenienced by walking now and then against the face of a cliff.

Although the south end of Banks Island where we crossed it was no more than fifty miles in diameter, we traveled in twilight and darkness through labyrinths of valleys between haphazard mountain ridges double that distance between December 22nd and January 4th, when we reached the sea ice of De Salis Bay. In another five days we had examined the whole southeast coast of the island and had crossed Prince of Wales Straits to Victoria Island without discovering any signs of human beings. This is the one time of the year when traveling is dangerous if you rely upon game for food and fuel. The game is there, of course, no less than at other seasons, but the darkness is the handicap in securing it. We found the ice in the vicinity of Victoria Island not to be in motion, and as there consequently was no open water the chance of getting bears was less than elsewhere. Seals could be secured only through the tedious method of having the dogs discover breathing-holes and then waiting for the seals to come up, a method where the element of chance plays such a part that no one should use it where another method is available.

So instead of stopping to hunt in Victoria Island when our food-supplies began to run low, we turned back to Banks Island toward open water observed on the way along the coast east from De Salis Bay. One reason why supplies began to run low was that we had taken but little food with us from camp, even though we realized that midwinter darkness was going to make hunting precarious. It was imperative to travel light if we were to cross a range of mountains, climb steep ridges and make precipitous descents into valleys, in daylight insufficient for the selection of better courses. A light sled could be managed; a loaded one could not be moved by the combined strength of men and dogs. I had also felt certain of finding the Eskimos who would have had stores of food from which to supply us.

When we turned back from Victoria Island I had no immediate intention of giving up the search after Eskimos, but expected merely to replenish food stores at De Salis Bay. January 12th was our first day of hunting. A clear day at noon, it gave daylight enough to see the sights of the rifles for about two hours, although not clearly enough for good shooting. It is never really safe to leave a camp unguarded, with the dogs subject to attacks of wolves and bears, but we took the chance, and went in different directions to search for game, I to find none, Natkusiak to kill one seal.

For three days after that both of us continued to be unsuccessful in our hunting. Both of us killed seals, but the ice was moving so rapidly that before we could secure them they had been buried under crushing heaps. Tracks of polar bears were numerous, and it was only a question of time when one would be encountered. On the fourth day I had just killed a seal and secured it when over my shoulder I saw three bears approaching. It was past the twilight noon and their yellowish-white outlines against the pure white ice were so indistinct that they could not be seen except when they were moving, or at least their bodies could not, except for the shiny black noses. When bears are on the alert and when they either see something indistinctly or are expecting to see something the presence of which they suspect, they move their necks and their whole bodies to peer about in a peculiar snaky way. Then they give about the effect of railway men's signal lights that are being swung on a dark night. These particular bears made themselves conspicuous now and then by standing on their hind legs, which brought their profiles against the sky. My first two shots brought down one big bear and a small one, but the third inflicted apparently only a flesh wound and the bear that received it disappeared in the rough ice.

Natkusiak, about half a mile away, heard the shooting and soon arrived. We skinned the two bears, and, making a sort of sledge of the skin of the small one, loaded into it its own meat and dragged it home, allowing the meat of the other and the seal to take its chances. These bears came just in time, for we had but a single meal left of the seal killed three days before. The following day we found where we had left them the other bear and the seal, although the ice, which was crushing in the neighborhood, might easily have buried them during the night.

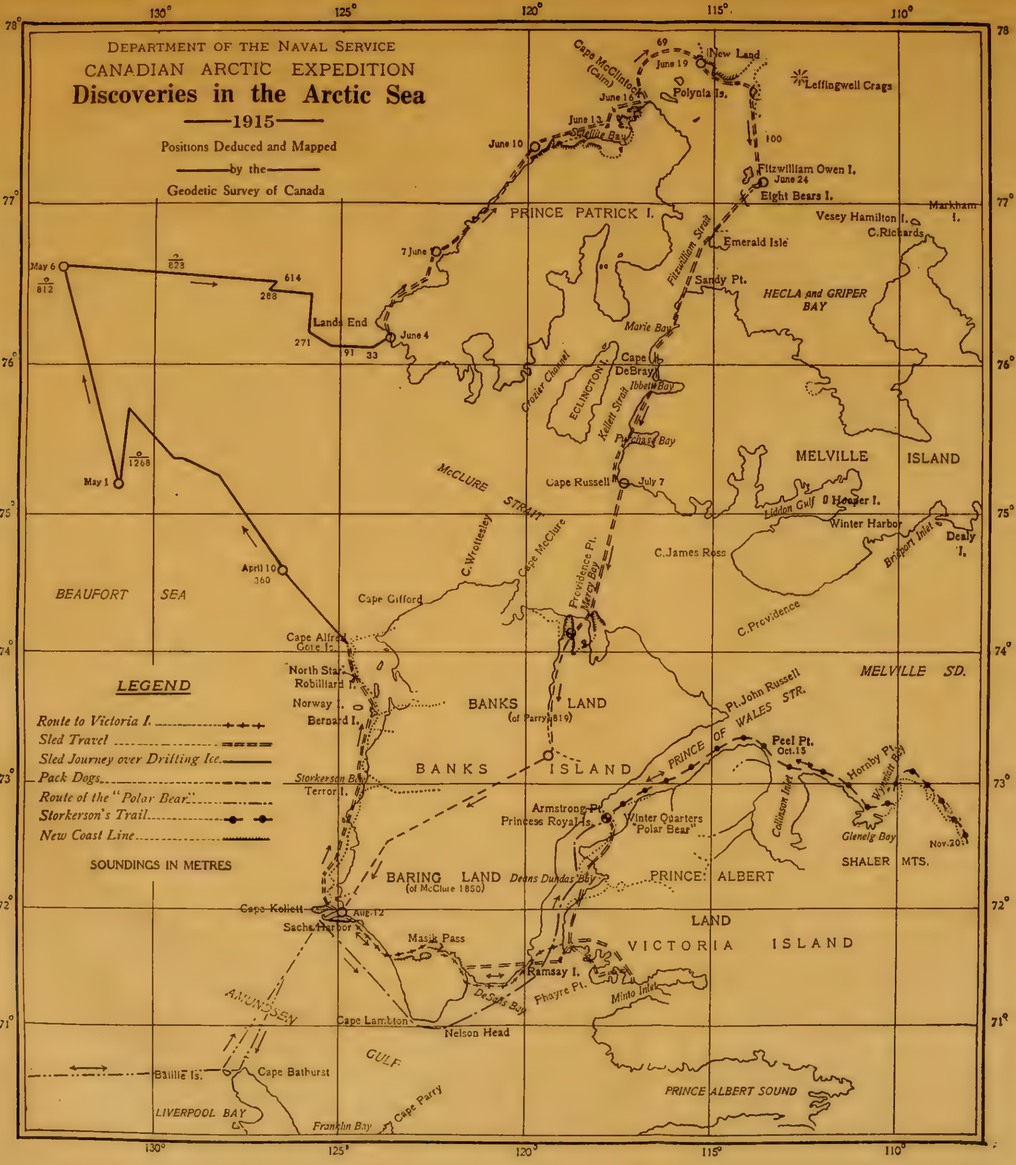
One of the most serious losses when the *Karluk* sank will be recalled as that of our small kerosene-containers intended for sledge journeys, which had been substantially made of galvanized iron. As kerosene is much more convenient than blubber for cooking in snowhouses in winter, we were carrying a supply of it in an ordinary five-gallon tin such as is furnished by the oil companies, and now found that it had sprung a leak and that nearly all the kerosene was gone. This mischance, together with the too rapid passing of the midwinter period, decided me to give up for that year the search for Eskimos and to return to the winter base at Kellett. We made the return with such good luck in weather for picking a trail through valleys where earlier we had floundered up and down ridges, that we were able to travel in one day as much as forty-five miles, a distance that had taken seven days on the way east.

When we got back to Kellett we found that Wilkins had completed a series of tidal observations. But both during this period and through most of his time with the expedition he put much labor and care into the gathering and preparing of zoölogical specimens. This is, for any one who lacks the scientist's enthusiasm, a sort of work where the fun soon wears off. The animal, say a fox, is first measured as to several dimensions in a routine way. Next the skin is carefully removed and hung up to dry, salted or "poisoned" with arsenic and alum or some similar chemical, and a label attached giving all available information as to age, sex, size, date and place of killing, etc. The skull, after being cleaned and having the brain removed through the *foramen magnum* in a tedious way, is labelled correspondingly with the skin, and so are the "long bones" of all four legs, and the lot are put away. These are the data of the closet naturalist who studies the specimens and the accompanying information after the expedition gets home.

I have never known any one who worked harder than Wilkins. He would be cleaning the scraps of meat off the leg bones of a wolf before breakfast and scraping the fat from a bearskin up to bedtime at night. His diaries were filled with information about the specimens he gathered, his fingers were stained with the photographic chemicals used in the development of his innumerable plates and films, his mind was always alert and his response always cheerful when a new task was proposed. A half dozen such men would make an invincible polar expedition.

Everybody remaining at the home base was working so well that it seems almost invidious to single out Wilkins. Crawford, Ole Andreasen, and Storkerson were at their trapping camps five, fifteen and twenty-five miles away, catching each his hundred or two hundred foxes, the pelts of which grow more expensive each year as women's need for summer furs increases. These three men were working for the expedition only half the year and so had time to grow rich during the winter. The men at the base camp were trapping foxes also in their spare moments, but many pelts went to Wilkins to become zoölogical specimens and the rest to the expedition storekeeper, for all these men were on full pay and everything they secured belonged to the Government. But most of their time was spent in work preparing for the ice trip.

Mrs. Thomsen at home and Mrs. Storkerson at the trapping camp were busy making or mending skin clothing. Thomsen hunted seals for dog feed part of the time and foraged around Kellett with his team in search of driftwood. Levi did the cooking, in addition to slicing and drying bear and caribou meat to make it more portable as sledge provisions, and, most important of all, kept everybody in good spirits with his inexhaustible good nature and his everlasting tales, some of which were probably truer than they sounded, though the adherence to truth was never slavish enough to make them commonplace. Captain Bernard, a wonderful carpenter, blacksmith and mechanic in all lines, worked as early as Wilkins and as late repairing or making sledges. His ingenuity and industry were beyond price, for we had no good sledge except the one used in coming to Banks Island over the ice the previous spring. Neither did we have any really suitable material for making a new sled, but by plundering the *Sachs* of a bit of hardwood here and a strip of iron there Bernard was able to make us one of the finest sleds we ever used. It must have hurt him to do it, for he loved the *Sachs,* which he had owned for many years before selling her to us, and he had sold her with the provision that he might buy her back at the end of the voyage. He already had dreams and plans of what he would then do with her.


DEPARTMENT OF THE NAVAL SERVICE
CANADIAN ARCTIC EXPEDITION
Discoveries in the Arctic Sea
1915
Positions Deduced and Mapped
by the
Geodetic Survey of Canada
LEGEND
Route to Victoria I.
Sled Travel
Sled Journey over Drifting Ice
Pack Dogs
Route of the "Polar Bear"
Storkerson's Trail
New Coast Line
SOUNDINGS IN METRES
130°
125°
120°
115°
110°
78°
77°
76°
75°
74°
73°
72°
71°
New Land
Leffingwell Crags
Cape McClintock (Cairn)
Polynia Is.
June 19
June 16
June 13
Satellite Bay
June 10
69
100
Fitzwilliam Owen I.
June 24
Eight Bears I.
Markham I.
Vesey Hamilton I.
C. Richards
PRINCE PATRICK I.
Emerald Isle
Fitzwilliam Strait
Sandy Pt.
HECLA and GRIPER BAY
7 June
May 6
823
812
614
288
Lands End
June 4
271
91
33
Marie Bay
Cape DeBray
Ibbett Bay
Crozier Channel
EGLINGTON I.
Kellett Strait
Purchase Bay
MELVILLE
ISLAND
Cape Russell
July 7
Liddon Gulf
Hooper I.
Winter Harbor
Bridport Inlet
Dealy I.
McCLURE STRAIT
C. Wrottesley
Cape McClure
Providence Pt.
Mercy Bay
C. James Ross
C. Providence
May 1
1268
April 10
360
BEAUFORT SEA
Cape Gifford
Cape Alfred
Gore Is.
North Star
Robilliard I.
Norway I.
Bernard I.
BANKS LAND (of Parry 1819)
MELVILLE SD.
Pt. John Russell
PRINCE OF WALES STR.
Peel Pt.
Oct. 15
Hornby Pt.
Wynniatt Bay
BANKS ISLAND
Storkerson Bay
Terror I.
Armstrong Pt.
Princess Royal Is.
Winter Quarters "Polar Bear"
Collinson Inlet
Glenelg Bay
Nov. 20
SHALER MTS.
BARING LAND (of McClure 1850)
Dean Dundas Bay
PRINCE ALBERT LAND
Cape Kellett
Aug. 12
Sachs Harbor
Masik Pass
VICTORIA ISLAND
Ramsay I.
DeSalis Bay
Phayre Pt.
Minto Inlet
AMUNDSEN GULF
Cape Lambton
Nelson Head
Baillie Is.
Cape Bathurst
LIVERPOOL BAY
Franklin Bay
Cape Parry
PRINCE ALBERT SOUND

# CHAPTER XXIX

## SPRING TRAVEL, 1915

THE first advance ice party of the year left Cape Kellett under the command of Wilkins on February 9th, and the rest of us started a few days later. Our plan was to follow the west coast of Banks Island north about a hundred and fifty miles and then to cross McClure Strait to Prince Patrick Island and strike out on the ocean northwest from the southwest corner of that island.

Before leaving I had come to realize that we were facing a failure of the plans for that spring because of circumstances not to be prevented, however clearly foreseen. The various sorts of dog sickness are still as mysterious as were the African fevers in the time of Livingstone. By Christmas-time our dogs at Kellett had begun to die one by one. In some cases it was the fattest and the youngest dogs, in others the oldest and most decrepit. The only thing we could do was to isolate the affected animals from the healthy ones, and this may have helped, although one or two of the dogs that died appeared never to have had any contact with the ones that originally showed the disease. There are many theories about these diseases. There may be some significance in the fact that we have never lost any dogs that have been living on caribou or other land game, but always dogs that have been living on seal meat.

When we finally got away from Kellett we still had two good dog-teams and a third poor one, which was really all we needed with only two first-class sledges. But a day or two after starting we faced a serious additional difficulty. During the preceding autumn a certain amount of snow had first fallen upon the coast ice and later a shower of rain had formed a skin of ice over the snow. On top soft snow had again fallen, but the thin layer of ice was left as a sort of roof over innumerable cavities and soft places underneath, so that every few steps a dog would break through and get the sharp, angular pieces of thin ice between his toes. Before we realized it nearly all our dogs had bleeding feet and some of them were incapacitated for work. The temperature was averaging for a period of weeks forty-two degrees below zero. Out at sea such cold is really an advantage, but now it prevented us from doing what we should have done had the weather been warmer—namely, tying boots upon the feet of the dogs to protect their pads from the cutting ice. At this temperature we did not dare to do it for fear the tight lashing might so interfere with the circulation as to cause freezing of the feet.

When we got to the northwest corner of Banks Island more kerosene-containers were leaking. To have kerosene is an undoubted convenience; and now since the only hope of healing the feet of our dogs was through a long rest, I sent Storkerson and Thomsen back to Kellett for more kerosene, with a team which we did not expect to use on the ice, giving the sore-footed dogs a rest meantime. The result of these delays was the healing of most of the sore feet, but also that it was April 5, 1915, when we were finally able to leave shore. It had taken us 55 days to get from the south end of Banks Island where our base was, to the north end of Banks Island where our base should have been. It was now too late, in my opinion, for crossing to Prince Patrick Island, so we struck northwest from Cape Alfred.

Our party up to this time had consisted of seven men. But now I sent back Wilkins, Crawford, and Natkusiak, and the ice exploratory party of that year therefore consisted of Storkerson, Thomsen, Andreasen, and myself.

Of the three men that went back, Crawford could not very well have been taken on the ice, though he would have been an excellent man otherwise, because he had the orthodox attitude towards meat: that while it is a desirable part of any meal, no meal should consist of it wholly. His view was that "no wages could pay him for living on meat alone, like a dog or a savage." Natkusiak did not mind living on meat, but he was afraid of the sea ice; he considered it luck or necromancy that we had not been lost on the Martin Point trip. "Some time," he said, "you will go out to sea and not come back." He did not consider himself a coward, neither do I consider him so. On the basis of what he believed about the sea ice he was merely making such a distinction as most people approve between courage and foolhardiness.

As for Wilkins, I would have liked to have him along and he would have liked to come. But the value of a more northerly base to work from next year, which had always been clear, was more than ever clear now after two wasted months on the west coast of Banks Island. The obvious thing to do was to send for the *North Star* so as to have her next summer to make this more northerly base in the fall. The only man to fetch her from Coronation Gulf was Wilkins and I reluctantly delegated him to that job. The reluctance was not merely because he would have made a good ice man; I had three good men, all that could be used when we had only two strong sleds and two good dog teams. But had he been able to spend the summer on Banks Island he could have added greatly by photographs and observations set down in his notebooks to our knowledge of the topography, geology and natural history of this interesting and fertile land. It was our home for several years, but because of the paramount importance of searching the Beaufort Sea to the west and north for lands and deeps and currents and other data of that hidden region, we crossed Banks Island always too hurriedly, and brought back at the end of the expedition no really comprehensive account of its geology, geography or zoölogy.

Because the season was already so late we took rather more risk on this sea ice journey than I consider generally justifiable in polar work. On April 10th, for instance, we camped at the southern edge of a level expanse of ice of unknown width. I examined it in the evening and found it about four inches thick, not strong enough to bear a sled, but that night we had an exceptionally hard freeze and the next morning it was between six and seven inches thick. This is quite thick enough for loaded sledges if the area to be crossed is a limited one, and no matter what the area it is safe so long as the ice remains unbroken. But ice of this thickness, as indeed of any thickness, may at any time be broken up by increase in the strength of a current or the sudden oncoming of a gale. If the ice is thick no great danger to life results, for then a cake of almost any size will be a refuge for men and dogs, but if six-inch ice commences to break up no cake is safe unless it is of great area; and under the strain cakes naturally break into smaller and smaller pieces. If we were to find ourselves with a loaded dog-sled on a piece not much bigger than is necessary for the men and dogs to stand on, the cake would either tip on edge, spilling us into the water, or actually sink under our weight.

It is not often that we have found perfectly level ice to be more than five miles across, and the morning of the 11th when we started out on this six-inch ice we expected to cross it in an hour. But we found it sticky with the salt crystals on its surface, as indeed it was bound to be, and this interfered with speed so that we did not travel at much more than three miles per hour where we had thoughtlessly supposed we could run at the rate of five or six. In some places the ice had telescoped on the previous day, but wherever it was of single thickness it bent perceptibly though slowly under our weight, and we never dared to stop except upon telescoped places.

Hour after hour we traveled and the horizon was everywhere a straight line with the sky. It was exceedingly cold, and clouds of "steam" were seen rising here and there. These worried us a bit, for we thought they might be from opening leads, danger signals that the break-up of our ice had commenced. But there was about an even chance they might be rising merely because six-inch ice is so warm from the water underneath that it throws off clouds of vapor if the air is at a low temperature. The vapor clouds continually receding before us showed that they did not come from open water, but were forming from the ice. After twenty miles of travel under this fairly tense nervous strain we sighted some heavy old ice upon which to make a safe camp for the night. Less than an hour after we landed the thinner ice we had left began breaking up. This gave excellent sealing water right by our camp, but it gave also an uncomfortable feeling that had the thin ice been five miles wider or had we started an hour later, this day would have been the last day of our travels.

For some two weeks traveling northwest from Cape Alfred our soundings showed an uneven sea bottom, for the water varied in depth from a hundred to two hundred fathoms. Comparison of the dead reckoning with our astronomical observations also showed that the ice we were on was moving steadily to the southwest—an inconvenient fact when our hopes all lay to the northwest. There was a great deal of open water, but a quarter or half a mile of it took us only an hour or two to cross, for we were expert by this time in converting our sleds into boats by the use of the tarpaulin. Much more often the leads were filled with moving ice, or with stationary ice not strong enough to walk on but so strong that, had we attempted to break a way through it with our sled boat we should in half a dozen crossings have chafed holes in the already worn canvas.

A delay beside a lead when the ice is not moving is one thing, and a delay when it is drifting opposite to your course is quite another. We took frequent chances in crossing leads on thin ice, and one of these crossings, on April 25th, came near ending in disaster. We had realized the risk and taken certain precautions. Our main dependence being always rifles and ammunition, we carried half the ammunition and two rifles on each sled, and for an additional precaution I used to carry my own rifle on my back, and about fifty rounds of ammunition with it. Had we lost one sled we could still have continued with the other; and had we lost both, the fifty cartridges would probably have taken the four of us home, even across five or six hundred miles of sea ice and uninhabited land. The question of footgear for so long a walk would have been the most important. We should have had to bend every effort toward getting home—there would have been no loitering by the way. Certainly exploration for the year would have been at an end.

The accident resulted when we came to a strip of young ice about ten yards wide. As on all such occasions, I walked out upon it carefully, while the teams and men awaited the verdict. With my hunting-knife I made holes at three different places, and by putting my hand in the water found the ice was about six inches thick. To those used to fresh water, ice of six inches seems a great thickness, and as a matter of fact a team of dray-horses and a heavy load could be taken across six inches of fresh-water ice. Salt-water ice is a different thing. A piece four inches thick, if you allow it to drop on any hard surface from a height of three or four feet, will splash like a chunk of ice-cream instead of falling like a piece of glass as would glare ice of the same thickness. So I knew the crossing was dangerous, but it was so short that I thought the dogs would probably be upon firm footing before the ice broke, if it did break.

The first sled crossed safely. It had been built by Captain Bernard according to a modification of my own of the standard Nome design, with runners that rested on the ice for seven out of their twelve feet of length, so as to distribute the weight over a large area. The other sled was of the typical Alaskan type, where the runners are bent somewhat rocking-chair fashion to make the sled easier to turn and maneuver, and only two or three feet of the middle part of the runners rest on level ice.

Ole was in charge of the leading sled, and as it came across without difficulty Storkerson and Thomsen anticipated no trouble with the second. They were walking close to the rear end when I noticed the ice under them begin to bend. I shouted to them to get away from the sled, my thought being to remove their weight and to expose the ice to the sled's weight only. But when they realized that the ice was about to break they began to push the sled with the idea of getting it quickly over to the other side. When both of them took hold of the handle-bars and commenced pushing, the inevitable happened. The sled broke through, after the dogs had landed on the firm ice beyond, but when the front end had barely touched it. Before the ice had fully broken I had hold of the trace of the leading dog and Ole was at the bow. Storkerson and Thomsen escaped falling into the water by letting the sled go, and the stern was immersed while the bow was held against the ice by the combined pull of the dogs, Ole and myself. It was doubtless not much more than a second before we all had our hands on the front end of the sled and not more than two or three till we had it out of the water, but it seemed much longer, and it was certainly long enough for us to visualize what our situation would be if we lost what was on the load. Not a fatal situation necessarily, although we might have had to give up our work for the year at that point. As it was, we had to spend the next two days in camp getting rid of as much as possible of the ice that had formed on the articles that got into the water.

After the accident we examined the ice, measured every broken piece, and found that at the very thinnest it was five and three-quarters inches thick. The temperature in the shade at the time had been twenty below zero, but the sun was shining on the ice, bringing the temperature upon its surface up to about zero F.

Long before this we had left the area of shallow soundings and were now traveling over an ocean of unknown depth, for our sounding-wire of 4,500 feet never sufficed to reach bottom. The ice behaved in a peculiar way. When the wind blew from the south or southwest, no matter how hard, it would merely stop moving, or, in the case of an extreme gale, would in the course of a day move a few miles to the north. But whenever there was a calm or when the wind was from the northwest, the north, or the east, the ice kept moving steadily southwest. In other words, a large part of our gain by walking northwest was neutralized by this nearly constant drift to the southwest. By the middle of May we had lost hope of making any notable journey to the northwest that year, for we were only a hundred miles offshore from the Prince Patrick Island coast.

For a time after reaching this conclusion we tried to travel northeast directly into the teeth of the drift, but we lost as much ground at night as we gained in the daytime, and eventually turned toward shore. The current was so strong, however, that we were unable to reach land on Prince Patrick Island abreast of our turning-point but were carried south, and were with difficulty able to get ashore on the southwest corner near Land's End, on June 4th.

# CHAPTER XXX

## MEN AND BEARS AS SEAL HUNTERS

THE west coast of Prince Patrick Island was explored in 1853 by a party under command of Lieutenant Mecham, of McClintock's expedition. Mecham tells how no country could possibly be more barren or desolate. Not a blade of grass was found nor a living creature, but gravel everywhere, and the land sloped so imperceptibly to the sea that they had to dig through the snow to ascertain whether they were on land or on ice. In view of this and of the fact that we had been for several weeks out of fuel and had finished our dog feed before that, it became necessary to talk over the advisability of going on. We all knew that the world would approve if we were to turn home at this point, for it has been the rule in arctic exploration that the traveling parties face toward home soon after half their provisions are gone, relying on the other half to take them back. It had been so with Mecham and with McClintock; a portion of this very coast remained unexplored because Mecham's party on the south and McClintock's on the north had been forced by the partial exhaustion of supplies to turn back toward their base on Melville Island.

But I was delighted to find all of us agreeing that no risk of life was involved in advancing into any portion of the Arctic without supplies at this season of the year. While we did not expect to find Mecham wrong in saying that no life could be found on the coast of Prince Patrick Island, we felt that this would only mean that if our experience agreed with his we should have to turn back to sea again, where, on the ice and in the water, food could be secured. This was a fact that Mecham and the explorers of his time did not realize, as we can see by his account published in the Parliamentary Blue Books, and by Sir Clements Markham's review of the work of Mecham and McClintock in his "Life of Admiral McClintock." So we traveled on, enthusiastic not only about possible discoveries ahead, but about proving that they are wrong who lack faith in the bounty of the Arctic.

In following the coast northeastward we soon saw that

Mecham's charting of it was by no means correct, but we saw also that were we to attempt to revise its minute details our results would not be much better than his, if at all. It was a question of light. There is much fog at this season, and Mecham had evidently done a good deal of his mapping in fog, with the inevitable results. If we were going to attempt a revision of his work we should have to do part of our work in fog also, and those portions of the coast where he had sunlight would have been done by him better than we could do them in fog; the only improvement we could hope for would be here and there where our luck in weather was better than his. Nor can any one with any reasonable ease make a map of this coast in winter, for the land slopes so imperceptibly into the sea ice that so long as snow covers both alike, their limits can be ascertained only by digging. A good map of this coast can be made only when the land is free of snow, in late June, July or in August.

A few days confirmed Mecham's opinion of the absence of game. Accordingly, we went offshore about ten or twelve miles to where the landfast ice meets the moving pack, and there in the open lead secured some seals. It is a curious fact, confirmed by the experience of years besides this one, that bear tracks are absent in spring north of the south end of Prince Patrick Island. This is doubtless because seals in these latitudes and longitudes are inaccessible to bears on account of the peculiar ice conditions, although they are easily secured by the more skillful human hunter, whose methods it is high time for us to describe.

There is little originality about our methods of hunting seals—we have borrowed them from the Eskimos unchanged except for the omission of numerous superstitious practices which, though considered integral parts of the technique by the natives, present themselves to our minds as clearly adventitious.

Obviously seals, where they exist, are found in one of three situations—they are on top of the sea ice, under it, or in the open water between the floes. Accordingly, there are three branches to the method of the hunter.

The simplest case is when you hunt seals in open water. On arriving at the edge of a lead or other body of water you may find dozens of seals swimming about within gunshot. We shoot seals through the head, commonly, because a seal is more likely to sink with a body wound, especially one that lets blood or water into the lungs. In all seasons except summer nine killed seals out of ten will float if shot through the head and perhaps seven out of ten even with a body wound. As noted elsewhere, the sinking of a large percentage in summer is probably due not so much to the seals then being less fat and of a higher specific gravity, as to the comparative freshness and diminished specific gravity of the surface sea water, the fresh water of the rains and thaws forming a surface layer on the ocean through which the seals sink to the heavier, saltier water below.

If the killed seal floats, and is not more than twenty to thirty yards away, he is secured by the manak. A manak is a ball of wood the size of a grapefruit. At its equator are three sharp recurved steel hooks and at one pole is a ring to which is attached a long cod line or slender thong. The hunter holds the coiled line cowboy-fashion in his left hand and with a fathom of free rope he swings the manak about his head till it whizzes, and then throws it somewhat as the South Americans are said to do the bolas. You throw beyond the seal where he floats like a short log in the water. Before pulling in you try to flip the line over so that as you haul towards you it will drag over the seal. As the manak is about to slide over the back of the seal you give a sharp jerk, one of the hooks catches in the seal's skin and you pull him to you.

If the seal is too far off to be reached by the manak you convert a tarpaulin and a sled into a sledboat, as already described for crossing leads, and paddle out to the seal.

When you come to open water you may see dozens of seals swimming about, but again you may have to wait a dozen hours before you see the first seal. You may see none the first day, which requires a second day of watchful waiting. If you see none the second day you watch a third day and, if needed, a fourth. So far it has never happened to us that we did not secure a seal within four days of watching; but if that did happen we would simply continue waiting if we needed the meat and had no other way of getting it. If you are on a "water hole" surrounded on all sides by ice but slightly broken, you should not undertake a wait of more than a few hours, for no seals may come. But if you are on a lead of considerable length it is merely a question of a few days at most till they arrive, for the great leads are their highways. From your camp by a lead you may see no seal Monday and Tuesday where a hundred may pass you on Wednesday and Thursday.

To understand the detection and securing of seals under the ice our view must go back to the preceding summer. Each successive summer gale breaks the ice more, and there are no frosts to cement the fragments together before autumn. There is enough water between the floes so seals can travel freely in all directions, and they do, coming up in the free water patches to breathe. Then comes the autumn with its light frosts and mushy young ice forming everywhere. The seals are reluctant to stop their wanderings and are free to continue them awhile, for a sharp upward bunt of their heads will break ice up to four inches thick and give them a chance to breathe. When a seal travels along a lead covered with young ice he leaves behind a trail of circular fracture spots from a dozen to several dozen yards apart. Months later, and up to next summer, these fracture spots are our game signs, our index to the former presence of seals. Most of them are hidden by the snow in winter, but if you watch as you travel, all day and every day, you will eventually be rewarded by seeing an ice patch swept bare by some wind eddy where there happens to be the characteristic round fracture spot.

But when the ice thickens beyond four inches and hardens, the seals must stop traveling and take up residence. Here, by industrious gnawing, they keep breathing holes open all winter. At the surface these holes have openings only an inch or two in diameter; but underneath they are enlarged continually until as the ice thickens to two or four or even the maximum of seven feet, they become cigar-shaped chambers of diameter large enough for the seal's body. Each seal may have a half-dozen of these cigar-shaped chambers leading to breathing holes that are covered with a few inches or a few feet of snow and thus hidden from the observation of man and from the eye of an animal. A bear can discover them by the sense of smell. This may serve his purpose if the ice is only a few inches thick, as he can with his mighty strength fracture it for several square yards around. The seal will imagine this ice to have been broken by the pressure of wind and current and will rise with purpose to breathe and with result of becoming a meal for the waiting bear. Near land the ice is much broken by pressure at all times of year and young ice thin enough to be broken by a bear is continually forming over patches where seals sported in open water a few days earlier. On this young ice as well as in the open water itself the bears know how to get the seals. But far from land the pressures are milder and the ice less often broken by it, so that there are large areas where the skill and strength of the bears do not suffice to get them any seals. Accordingly, bears are rare or absent, which is one of the reasons for the view which was universally held that seals were non-existent in the deep polar ocean far from land. Bears are really absent from these areas because they lack the ability to get seals there and not because the seals are absent.

Man alone would not succeed any better than the bear in finding seals on the large areas of fairly level ice far at sea, but man and the dog in partnership combine the needed abilities. A man and a trained bear could do as well.

The breathing holes of seals are sometimes seen on patches of ice swept bare of snow by the wind, but these holes have usually been abandoned by the seal. The ones in actual use are generally covered with snow so no eye can see them and no faculty of man detect, and only bear or dog can find them by the sense of smell. While this ability does the bear no good if the ice is too strong to be broken, the ingenuity of man is equal to the task of securing the seal.

If a man who has no interest in seals, or to whom it has never occurred that any might be near, drives a dog-team over snow-covered ice and finds them wanting to stop and sniff the snow, he urges them on impatiently, imagining the dogs trying to find an excuse to shirk. But if you believe that seals are found here and there all over the polar ocean, you will infer when a dog wants to pause and sniff the snow that a seal's breathing hole is concealed underneath. This inference is usually right, for there are few other things up there that smell.

If you allow it, the dogs may begin to dig in the snow as a dog would for a rodent. You must not permit it, for daylight in the breathing hole will scare the seal. The dogs' usefulness is over when they have scented out the holes. You lead or drive them to a distance of a few score yards where they lie down and sleep while your part of the work is on.

After quieting the dogs you go back, take a long rod like a slender cane and with it poke and prod the snow till the rod slips through into water. Now the hole is exactly located. You withdraw the cane and fill the hole made by it with soft snow to prevent clear daylight from entering. Then, by scraping with your hunting knife or by cutting blocks you remove most of the snow from over the hole, leaving a layer of only a few inches. Next you take an ivory "indicator" that much resembles a coarse knitting needle and stick it down through the snow so that its lower end passes through the breathing hole and is immersed in the water. When the seal rises to breathe his nose will strike this indicator and shove it upwards. You are now standing motionless above the hole (and perhaps have been for hours, for this hunting method, like most other primitive ways of getting game, requires much patience). Your eye should not leave the indicator where it stands upright like a peg in the snow. When the seal rises to breathe you cannot hear him, you cannot see him, and you have no warning till the indicator quivers or moves up. Then you drive your harpoon down alongside the indicator. If you hit the one or two-inch hole you hit the seal, for his nose is in the hole. He is now harpooned and you hold him by the harpoon line twisted around one leg while with an ice chisel you enlarge the hole enough to drag him out. One man can do this easily with a common seal (*phoca hispida*) weighing 150 or 200 pounds, but with a bearded seal weighing 600 or 800 pounds it is no easy job for two men.

The reason why you may have to wait for hours and even days for your seal to come up in the breathing hole is that he may have a dozen other breathing holes scattered through several acres of snow-covered ice, and he may be using one of the others temporarily. It is therefore best for several men to work together. When one hole has been located and a hunter stationed there, other hunters should take dogs in leash and lead them around in circles until as many holes have been located as there are available hunters. This greatly increases the chances of getting the seal promptly. Any clumsiness of method at one hole will, furthermore, merely drive the seal to another hole watched by a better hunter.

No one should aim to live by hunting on the sea ice without understanding this manner of sealing, called by the Eskimos the "mauttok," or waiting method (in the Greenlandic dialects "maupok"); but in actual practice we have never had to resort to it. We have merely had it as another string to our bow. Our seals are secured either by the (among the Eskimos) nameless way first described where a seal is shot in open water, or by the procedure about to be described, called by the Eskimos the "auktok" or crawling method.

Seals may at any season of year crawl up on the ice to lie there and sleep, but they do it chiefly in the spring and summer—from March when it still goes down to 30° or 40° Fahrenheit below zero to midsummer when even on the ice the temperature is 40° or 50° above zero and much of the surface is covered with pools of water.

A seal does not crawl unguardedly at any time out on the ice from his hole (enlarged by his teeth, or by the thaw, till it will let him up) or from the lead in which he has been swimming. He is always fearful of polar bears. When he wants to come up and bask, he spies out the situation by bobbing up from the water as high as he can, lifting his head a foot or two above the general ice level. This he does at intervals for some time—perhaps for hours—until he concludes there are no bears around and ventures to hitch himself out on the ice.

Here follows another period of extreme vigilance during which the seal lies beside his hole ready to dive in again at the slightest alarm. Eventually, however, he begins to take the naps that were his desire in coming out of the water. But his sleep is restless through fear of bears. He takes naps of thirty or forty or fifty seconds or perhaps a minute. Then he raises his head ten or fifteen inches from the ice and spends five to twenty seconds in making a complete survey of the horizon before taking another nap. A nap of three minutes is protracted slumber for a seal, although far away from land and in other regions where bears are few or absent I have seen them sleep for five and six minutes.

In rare cases basking seals will be found lying within rifle shot from an ice hummock or land, and can be shot from cover. Ordinarily, however, they select a level expanse of ice. In that case they will see the hunter long before he gets near enough to shoot. An essential of a successful hunt is therefore to convince the seal that you are something that is not dangerous. He may see you move and so you must convince him that you are some harmless animal.

There are only three animals with which seals are familiar—bears, white foxes and other seals. It would not serve the hunter to pretend he is a bear, for that is the one thing the seal fears. This consideration shows you must not wear white clothes for the advantage of "protective coloration" on the white ice. The seal will probably see you, and if he sees something suspicious and white he will think of a bear and dive instantly. You cannot very well pretend to be a fox for they are not much larger than cats, are very agile and continually keep hopping around. That part you would fail in playing. But if you are dressed in dark clothing and are lying flat on the ice you look at a distance much like a seal and you will find by trying it that you can imitate his actions successfully.

You can learn the auktok method of sealing from an Eskimo if you are among some group who practice it, but there are several groups among whom it is not in use. But in any case you can learn from the seals themselves, for your task is but to imitate them. Take your field glass with you and spend a few hours or days in watching basking seals from a safe distance. With seals that is 400 or 500 yards. In the books of the nature fakers animals are sometimes endowed with marvelously keen sight. I think it is true of many birds; and mountain sheep see well, though I doubt that they see as well as a man. Of the remaining "big game" animals known to me, the wolf has the keenest sight and yet conditions of visibility have to be favorable to him if he can see you at much over 500 or 600 yards. Neither a grizzly nor a polar bear is likely to see you at more than half that, nor are polar cattle, while a caribou may see you at 400 or 500 yards. A seal is not likely to see you at much over 300 yards.

Your cue is, then, to begin playing seal when you are about 300 yards away. Up to that point you advance by walking bent while the seal sleeps and dropping on your knees to wait motionless while he is awake. But at less than 300 yards he might notice you on all fours, and as that is not a seal-like posture you must begin to wriggle ahead snake-fashion. You must not crawl head-on, for a man in that position is not so convincingly like a seal as he would be in side view. You must therefore crawl side-on, or crawfish fashion.

You crawl ahead while the seal sleeps and you lie motionless while he is awake. Had you been upright or on all fours he might have noticed you at 300 yards but now he does not till you are perhaps 200 yards away. When he first sees you his actions are plainly interpreted—he becomes tense, raises his head a little higher, crawls a foot or two closer to the water to be ready to dive, and then watches you, intent and suspicious. If you remain motionless, his suspicions increase at the end of the first minute, and before the third or fourth minute are over he plunges into the water, for he knows that no real seal is likely to lie motionless that long. Therefore, before the first minute of his watching is over you should do something seal-like. You are lying flat on the ice like a boy sleeping on a lawn. The easiest seal-like thing to do is to lift your head ten or fifteen inches, spend ten or fifteen seconds looking around, then drop your head on the ice again. By doing this half a dozen times at thirty or fifty-second intervals you will very likely convince your seal that you are another seal.

But some seals are skeptical. If yours seems restive and suspicious it is well to increase the verisimilitude of your acting by not only lifting your head at varying intervals but also going through whatever seal-like antics you have observed while watching the real seals through your field glasses.

It is one of the few unharmful results of the late war that we can now describe freely and discuss openly certain things that were taboo before. Thanks to the war experience and frankness of our soldiers, those of us who lack practical experience have at least theoretical knowledge of the "cooties" which our more familiar ancestors knew as a louse. Seals are lousy, not with our familiar graybacks of course, but with a variety of louse or tick of their own. Being thus infested they itch, itching they want to scratch, and not being restrained by any etiquette in these matters they are continually rubbing and scratching themselves. They rub themselves by rolling on the ice and scratch chiefly with their hind flippers which are long and flexible and armed with admirable claws. It is therefore advisable for the hunter to roll about a little and to flex his legs from the knees frequently as if scratching with hind flippers. These actions make an impression upon the seal which in the long run is convincing and in eight cases out of ten a good hunter is accepted as a fellow seal that has just come out of his hole to bask and sleep. The seals that refuse to be convinced have probably had a narrow escape recently from a bear. Possibly, too, some of them may be getting hungry and may decide not to bother to study the new arrival but to take the occasion for going down and having a feed. That this motive frequently influences seals we judge from the fact that towards midnight a seal usually goes down soon after noticing us. As remarked elsewhere, a seal usually comes up on the ice in the early morning or forenoon and commonly goes down to feed towards midnight.

But if you once get your seal convinced he stays convinced. There is nothing fickle about a seal. He not only does not fear you but even appears to rely on you. He is always alertly on guard against the approach of a bear. I am not very deep in seal psychology, but they appear to me to say to themselves: "Over there is a brother seal, and if a bear approaches from that side he will get him before he gets me. So I can afford to leave that quarter unwatched and can devote myself to guarding against a surprise from the other side." As if he held this view, the seal will give you only a casual glance now and then and you can approach with great confidence. You crawl ahead while he sleeps and stop when he wakes up. If he watches you for more than a few moments you reassure him of your sealship by raising and dropping your head, rolling and wriggling as if itchy, and by flexing your legs from the knees as if scratching with hind flippers—all this lying flat on the ice with your side towards the seal and never allowing him to see your long arms, for a seal's front flippers are short. If you are careful, if the snow is not crusty so it crunches, if a moderate wind from the direction of the seal covers any noises there may be, you can crawl as near him as you like. I have known Eskimos to crawl right up to a seal and seize him by a flipper with one hand while they stab him with a knife with the other. But they do this only rarely, either "for a stunt" or else because they have not the proper hunting gear with them. Ordinarily an Eskimo hurls his harpoon from a distance of from ten to thirty feet. I ordinarily shoot from a distance of twenty-five to seventy-five yards.

An Eskimo, using his native gear, holds the harpooned seal by the harpoon line. With a rifle only a brain shot will serve; for if the seal is not instantly killed he will crawl to the water and dive. The reason why I hardly ever shoot at as much as a hundred yards is that the seal is lying on an incline of ice beside the hole or lead. There are few things so slippery as wet ice and the mere shock of instant death may start him sliding and the blood from his wound may get under him, lubricating the ice and making him slide faster. The seal in most cases has buoyancy enough to float. But in sliding towards the water he acquires momentum enough to take him down diagonally ten or twenty feet. He then comes up diagonally under the thick ice and you can't get him. Fearing this, I always drop my rifle the moment I fire and run as hard as I can towards the seal. In some cases he does not slide at all and I slacken speed on getting nearer; in others he is sliding, gradually gaining headway, and I slide for him like a player stealing a base in baseball. In some cases I have caught the seal by a flipper just as he was disappearing; in others I have been too late and the seal, though stone dead, has been lost.

A good hunter should get sixty or seventy per cent. of the seals he goes after. The approach takes on the average about two hours.

Readers of antarctic books may wonder, "Why all this to-do about just the right way to hunt seals?" Their idea is that you can secure a seal any old way. So you can—in the Antarctic. Down South the seal knows no enemy, for there were no predatory animals till the explorers came. Fear is consequently unknown to them and if you walk up to a seal and scratch him he will roll over so you can scratch him better. The Arctic is different. It takes patience and an elaborate technique to get a seal near Prince Patrick Island. In the account of his journey in 1853 to the very place where we were now, McClintock, our only predecessor, said he had seen several seals, "but of course we were unable to secure them." It was formerly supposed that the auktok and mauttok methods described above could be used only by Eskimo hunters. But white men can use them equally.

In the fall hunting seals by the auktok method is often dangerous, for they are lying on ice so thin and treacherous that the hunter may break through, especially while trying to get the seal from the hole after he is killed. In midwinter seals can seldom be secured in this way because they do not crawl out on the ice. From April to June we kill most of our seals by this method. From June to September there is so much water on top of the ice that the auktok necessitates wriggling, snake-fashion, through pools of ice water from a few inches to a foot or more deep. This is not only disagreeable, but the almost unavoidable splashing may scare the seals. Therefore this is essentially a springtime method of hunting. We get about a third of our seals by it, two thirds by shooting them in open water. As said above, the mauttok method we keep in our minds merely as a standby. It is used by Eskimos in midwinter on level, thick bay ice near land. We would use it on the large expanses of fairly uniform ice found far from land if any of these proved so extensive that we ran out of food before we came to open sealing water. This has never happened to us, though it appears from the narrative of other explorers that it would be likely to happen. But that is because their travel methods were different from ours.

Our method of selecting a route over sea ice differs fundamentally from that of other explorers because our method of subsistence differs fundamentally. The Bible tells that the Israelites were guided across the desert by a pillar of cloud by day. The inference is that they traveled directly towards the pillar of cloud. As we traverse the sea ice in winter we see all about us pillars of cloud. If we are relying on the food in our sledges and either believe that no seals exist in the vicinity or else do not take any interest in them, then we avoid the pillars of cloud, for we know that each is but the vapor rising from a patch of open water hindering progress. To avoid these is a great concern to those who do not expect to profit by anything found in or near the open water and who are struggling ahead slowly and laboriously with laden sledges. But we are traveling rapidly and freely with light sledges. A detour therefore delays us less, and further, we have our food and fuel in the meat and fat of the seals that may be in these patches of water and the bears that prowl about the margins seeking seals. We therefore travel towards the pillars of cloud where others have avoided them and usually camp near the patches of open water. It ordinarily takes the men two hours to build the snowhouse, feed the dogs, cook the supper and get everything snug for the night. In less time than that I usually get a seal and bring it to camp before the chores are done. But, as said above, we give any needed time to the hunting and get to-morrow the seal we cannot get to-day.

The basking seals are usually seen first from some high hummock which we have climbed for reconnoitering with field glasses. They are killed either while the men are making camp; or else there is a pause made in the day's march while the hunter crawls up to the seal. In that case the men usually cook us a hot lunch while waiting, for—by the very nature of our method—it would be illogical to go on food and fuel rations in a country where hunting is actually being carried on. The animal when secured is then dragged behind the sled till camp time when he is cut up, part fed to the dogs, part cooked for us, and the rest stowed in the sled. A party of three men and six dogs need about two seals per week.

# CHAPTER XXXI

## WE COMPLETE THE MAPPING OF PRINCE PATRICK ISLAND

BECAUSE we traveled parallel to the land ten or twelve miles offshore, we found a series of small islands or reefs that Mecham had not noticed. When finally we came to the portion of the coast which he and McClintock had been unable to explore in 1853, we loaded up our sledges with meat and blubber and proceeded toward shore. The coast turned out to be rather complicated and there were several little islands. It took three days to complete the survey between the most southwesterly reached by McClintock, who had been working from the opposite direction.

When we started traveling on June 13th we were just about finishing, we thought, the unexplored part of the coast. The seal meat brought to land a few days before was now nearly gone. We had expected, any time it was finished, to leave the coast for a trip out to the shore floe, about ten or twelve miles, to get more food and blubber for fuel. But now that the weather was getting rapidly warmer the sun was thawing the roofs off the winter habitations of the seals that dwelt in the bays and shallow shore water, and they were beginning to come out upon the ice to sun themselves. It may be that the seals found in winter farthest from shore are the smallest, and that they get bigger the nearer land you find them. At any rate, I am fairly sure that the seals that come out on the inshore ice in late spring in places like Banks, Prince Patrick or the Ringnes Islands, are far larger than the average.

I think we had already seen two or three of these basking seals before I shot one the evening of that day. This was the largest "common" seal (*phoca hispida*) we had killed up to that time on either our 1914 trip or the present one. We weighed it with a spring balance as follows: meat 97½ pounds, head, flippers, stomach, lungs, etc. (some of these suitable to eat, though we do not class them as "meat" in this estimate) 32½ pounds, hide with blubber attached 85 pounds. We estimated in addition 1½ gallons of blood, some of which was used for "blood soup" * for ourselves and some for the dogs. Perhaps the "live weight" of the animal was towards 300 pounds, but it is probable the seals killed by us throughout the year would average under 150 pounds. That depends on whether we count the occasional bearded seals (*erignathus barbatus*). These run up to 800 pounds each, and a few of them bring up the average handsomely.

The evening of June 13th we camped on a grassy island shaped like a huge comma—huge only as a comma, not as an island, for it was only a mile across. We felt pretty sure that our survey had now begun to overlap McClintock's. We had been working in thick weather much of the time. So had he, as can be seen from the following quotation which, so far as concerns description of land, ice and weather, might have served as an entry in our own diaries. He wrote it sixty-two years before at just about the spot where we were now:

> "*16th June.* Saw two other small islands and encamped inside the second one, on a small sand-heap at half-past five o'clock. Appearances were against us when we commenced this march, the dark threatening weather, high contrary wind with falling snow, sand heaps in all directions, and driving banks of fog, so that the land could seldom be seen; and the snow-covered land too, showed only as a low streak of bright white, with the top of an occasional bare ridge appearing through it at long intervals like a dark horizontal line. At our last encampment this *decided* land was about 1 mile within us, whilst the sand-heaps extended nearly 1½ mile outside of us. Almost all this march has been over flat sand-banks covered with soft but level snow. A continuous line of very

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* Blood soup is a dish, the preparation of which we learned from the Eskimos. It is made after the boiling of any sort of meat, and Eskimos usually consider that the blood used should be of the same sort of animal as the meat boiled, although I have known seal's blood to be used with caribou broth. The preparation is as follows: When the meat has been sufficiently cooked it is removed from the pot which is still hanging over the fire. Blood is then poured slowly into the boiling broth with brisk stirring the while. In winter small chunks of frozen blood dropped in one after the other take the place of the liquid blood poured in summer. If the temperature of the soup is too much reduced the pot is allowed to hang over the fire until it comes nearly to a boil again, but not quite. Stirring must continue while the soup is over the fire. The consistency of the prepared dish should be about that of "English pea soup." Among Eskimos it was formerly drunk from horn dippers—the horn of ovibos being used in the east and those of the mountain sheep in Alaska. Nowadays tin or other cups are used and sometimes spoons. Small pieces of caribou or other suet may be added; if seal's fat is the only kind available, a little uncooked oil is added just before serving. Soup, among such Eskimos as I know, is not served nearly so hot as among us; we would consider lukewarm what they call hot.

formidable hummocks has been seen in the offing. These sand-heaps have a considerable intermixture of mud, probably washed off the land, whilst the Polynia Islands lying further offshore are all pure gravel. We also find here small pieces of gray gniess. On this little patch of earth I found the jawbone of a seal, and a few very small pieces of much decayed wood.

"P. M. Started at seven o'clock for an islet in the center of a deep bay, round which the land rises to moderate elevation; found the islet to be an oval ridge of gravel, its longest diameter about a quarter of a mile. Its most elevated part is to seaward and about 40 feet high, all within is a lagoon. Found here small fragments of driftwood, no tide crack or ice pressure.

"17th June. After taking bearings, etc., here, we traveled 7 or 8 miles to the next extreme of land, on rounding which we saw several islands forming a chain a few miles offshore; these keep off the heavy polar pack, and within them we have ordinary old floe, but having much less snow upon it all the hummocks being bare . . . Encamped at a quarter before five o'clock.

"The land is of a more considerable height; in some places a mile or two inland, it may be 150 feet high; and the sand-heaps are now confined to the depths of bays and inner points of the islands. We had not been long in our bags before a heavy gale came on, bringing drift and thickly falling snow in its train.

"P. M. The weather is worse if possible, we cannot advance against this gale not being able to see our way, nor will we retreat before it. It is very mortifying to be thus arrested within one march of our extreme, and to be unable to get a glimpse at the coast beyond that which we have actually walked to; to-morrow we must commence our retreat. The little sledge turned up on its side forms the weather end of our hurricane house; one end of a ridge pole rests upon it, the other end on my compass stand. The sledge's sail thrown over this affords us shelter on three sides, and here we sit anxiously watching the weather, and catching in our spoons the drops which penetrate the canvas. On this sand-heap there are many small fragments of decayed wood, and I have no doubt there is some of larger size and more recent importation on the outer islands, but now of course hidden by snow.

"18th June. Towards noon the weather began to improve.

"P. M. I had intended walking a few miles further, but the weather became too thick, so we reluctantly commenced our return at half-past six. Left a cairn and record on a point near our encampment, then crossed overland into Satellite Bay." (Report of Captain F. L. McClintock as published in "Further Papers Relating to the Recent Arctic Expeditions in Search of Sir John Franklin," London, 1855, pp. 570-571.)

Such was the weather and such were the difficulties recorded by McClintock June 16, 1853, and the days just before and

The Dogs Sleep in Their Harness While We Make Camp.
A Snowhouse Will Support Almost Any Weight.

On a Day of No Shadows.
Land and sky, hill and hollow are a uniform blur of dazzling haze.

after. An entry from my diary for June 16, 1915, completes and resembles the picture.

"*June 16.* Storkerson keeps the record and I seldom note the weather (in this diary) but I have never seen anything like it for clouds, snow and fog—only two partly clear days since we landed (on Prince Patrick Island), snow nearly every day and no shadows (cast by anything) so that dark objects are the only ones visible."

Again I would recall that to those who have not been in some country resembling the Arctic it may seem incredible that in daylight so intense that the eyes have to be protected against it, objects not of dark color should frequently be invisible. McClintock points out above that a snowclad hill with thawed ground on top does not appear as a white hill with a black top, but only as a black horizontal line apparently suspended in the sky. This is because the daylight on cloudy days is so evenly diffused that no shadows are cast. A snowclad hill does not loom against the clouded sky but blends with the background so well that when a man is seen to walk behind such a hill his legs disappear without visible cause of eclipse and then his whole body. You infer the hill that conceals him but you cannot see it. A snag of ice will be equally invisible until you stub your toe against it, though it may show then by contrast with your foot. That is the whole point —there are no contrasts on such a day. There are no shadows. And so you can see only dark things, or light things that are in close proximity to dark.

In view of the circumstances under which McClintock and we alike had to work it was not surprising that we had difficulty in making our map of the day correspond with his map of his "farthest." But we felt we had completed the gap between him and Mecham—that our comma island was a period to the story of our linking up the work of our predecessors and making the outline of Prince Patrick Island complete. We should have built a cairn and left a record here had we been able to find anything beyond gravel out of which to build it.

In outfitting the *Karluk* I had provided her library with those of the British Parliamentary Blue Books which contain the route maps and diaries of the sledge parties of the Franklin Search—one containing the diaries and surveys of McClintock and Mecham. These documents had gone with the *Karluk* and through lack of them I did not know that we were now in the vicinity of one of McClintock's cairns. We always looked around with the binoculars as well as the weather allowed, and probably the reason we saw no cairn was that it had been built of materials which had not withstood weathering.

June 4th we traveled north only about four miles and then camped at the west end of another island, oblong with the main axis east and west, about two miles long and 100 feet high. The day was cut short because while I was exploring some deep bights to the eastward the men saw several seals scattered on the ice. We had five days' provisions on the sledges, so that by ordinary rule no halt for hunting should have been made before camp time. But we had been talking much lately of the unwisdom of one man always doing the hunting. Were he to get sick the others might have undue trouble in getting food for themselves and him. Through my greatest experience and our desire to save both time and ammunition, I had so far done all the sealing on the ice; sealing in the water needs no training and all had had their share of that. Now that several seals were scattered about in ideal hunting weather the men concluded the psychological moment for practice had arrived. So, much to my wonder—I was watching them with glasses six or eight miles away—they camped, thereafter going off in different directions, each after his own seal.

Crawling up to seals sleeping on the ice is simple in theory and easy to describe. But as often happens to those who learn by precept, one may think he understands every detail and find on trial that he does not. So it turned out now. Although Storkerson, Thomsen and Ole all had excellent explanations when they came home, none had a seal. Thomsen, who was a very determined chap, later stayed up all night while the rest of us slept, making fresh attempts. He had a good appetite for breakfast next morning but no fresh seal meat to satisfy it. But I must say that when once he did secure his first seal, some days later, Thomsen seldom failed thereafter.

On this island were stones fit for making a cairn, although small and not abundant. Thomsen built a beacon two or three feet high and I wrote to deposit in it a "record" giving the latitude and longitude and describing in about a hundred words our journey up to that point. There was also a forecast of what we should do the remainder of the season.

As we approached the north end of Prince Patrick Island we felt we were coming into more intimate touch with the tragic occasion for the explorations we were now completing. Our predecessors, who over sixty years ago had mapped all but a little of this coast, were not mainly concerned, as we were, with adding to geographic and other knowledge. They did great things in that field incidentally, but only incidentally, for their main purpose was humanitarian. They were searching for the *Erebus* and *Terror* and the 119 lost men of Sir John Franklin's company. We know now that Franklin's men were all dead long before McClintock came to Prince Patrick Island in what was for the time a vain search. It was McClintock, however, who on a later expedition finally brought to light, a long way to the south and east of this his farthest north, the main events of the Franklin tragedy. Many of its details are still unknown.

Naturally as we approached the cape named after McClintock and the turning point of his search for the lost explorers, we began to talk and think more about the heroic adventures and accomplishments of that time, the traditions of which gave interest to every point of land as it came in view. And we tried to identify each with some landmark shown and named on McClintock's map.

# CHAPTER XXXII

## WE REACH MCCLINTOCK'S FARTHEST

ON the afternoon of June 15th we had evidently come to the north end of Prince Patrick Island. The two islets ahead were clearly those shown on the Admiralty chart just northwest of Cape McClintock. There was food for only a day or two in our sledges so we headed for one of these islands as a good vantage point from which to spy out seals. While my companions were pitching camp, I climbed the fifteen or twenty-foot cutbank of the island and looked around. There were three or four seals sunning themselves on the ice, so the food problem was by way of being solved once more. I then turned the glasses to the east.

On the tip of the land, just where I expected that McClintock might have built a cairn, I saw a low, round heap so placed as to suggest a work of man. Then I walked two miles across from the island to the mainland and found the remains of a monument. Probably the beacon was originally conspicuous, though now it was only a rounded heap not much over a foot high. It was composed in part of earth, in part of gravel and then of a few stones. There was one slab of 8x12x16 inches, and one stone the size of a pound loaf of bread. The rest were smaller, and all were half-embedded in the sand and gravel.

On removing the stones I found a papier maché cylinder similar in size to an ordinary shotgun shell, except a bit longer. With this I returned to camp.

I got home about midnight, to learn by exactly what perversity of nature each hunter had again been prevented from getting the seal he went after. But another day was coming and these trials of a hunter were soon forgotten in our interest in the McClintock record. First we discussed how the cylinder should be opened, and settled on cutting off one end with a penknife. With the three others watching I did this very delicately, lest the document be mutilated. But it came out in marvelous condition, considering that the sealing of the tube with sealing-wax had not been quite tight.

There was a thrill about unrolling that damp and fragile sheet and reading the message from our great predecessor which had been lying there awaiting us more than half a century. We felt it as marvelous that his steady hand was so legible after so long a time. It brought the past down to us, quite as wonderfully as it did for me five years later to talk in London with McClintock's wife, still hale and charming, and with his sons, and to be shown the manuscript diary of the day he wrote this message.

The record was on the ordinary printing paper of that time, and the message had in part been printed at the Dealy Island winter base before the party started on their western journey, in part written in red ink at the base, and in part entered by McClintock in pencil just before the record was deposited. The print was legible and so was the pencil writing, but the red ink had faded badly. I noted in my journal that while I should continue keeping my diary with a fountain pen for the sake of clearness, I should write in pencil any records I wanted to deposit.

The record follows, the print denoted by ordinary type and the writing in italics.

"Cylinder buried 10 feet true north from this cairn: *None.**

Traces: *None found.***

Party. *All well. Have examined this shore to the southeastward for about 150 miles. The sledge is now returning to the SE preparatory to crossing to Melville Island. I am about to proceed to the westward with a light sledge and two men for three marches, and will then return after the main party and make the best of my way to Pt. Nias and Dealy Island.****

*F. L. McCLINTOCK,*
*15th June, P. M.*

*"I have searched the islands and reefs lying offshore to the northward."*

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*It was a rule in the expeditions of the Franklin Search that any party finding a monument were to dig in the ground ten feet true north to look for a message unobtrusively buried. This was for fear of Eskimos in inhabited lands who might remove any message frankly left in the cairn.

** Traces of Sir John Franklin's Party.

*** McClintock made this exploration from his and Kellett's base at Dealy Island. The journey lasted 105 days (April 5 to July 18), and was estimated by McClintock at 1,030 geographical miles. Except the similar journey of Mecham from the same base to Prince Patrick Island simultaneously with McClintock's, it was far the best arctic journey with sledges up to that time. It has frequently been called "the greatest of all arctic journeys." Cf. Sir Clements Markham, "Life of Admiral McClintock," p. 166.

On the reverse of the sheet was the following, chiefly in print:

"Record, deposited *15th June, 1853,* by a Sledge party from H.M.S. *Intrepid.* Parties searching the NW, NE, SW & East coasts of Melville Island and Banksland for the Expeditions under Sir John Franklin & Capt. Collinson.

"At Beechey Island: H.M.S. North Star, also Depot, House, Decked boat.

"Port Leopold, Depot, House and Steam Launch.

"Navy Board Inlet—Depot.

"Dealy Island (Bridport Inlet) H.M.S. Resolute and Steamer Intrepid *the winter of* 1852-53. All well: Will deposit depot, Boat, Sledges, &c. H.M.S. Assistance, and Steamer Pioneer went up Wellington Channel 1852 H.M.S. Investigator wintered north side of Banksland in long. 118° W. 1851-52. All well (learnt from her record left at Winter Harbour April 1852; and found October, 1852.

*"F. L. McCLINTOCK,*
"Officer Commanding Party."

(The following in red ink in another hand):

*"Commander . . . winter at Point Barrow if practicable; but is to send a . . . at Grantly Harbour and at Michaelowski Redoubt."*

It is a matter of curious interest that this record is dated "P. M., June 15, 1853," and that I picked it up at 9:58 P. M. local apparent time, June 15, 1915, just sixty-two years later to the nearest half day.

In the original manuscript diary shown me in London by McClintock's son, Mr. H. F. McClintock, there is no reference to the placing of this record in the cairn. In the diary as published in the Blue Book we find in the account of the return from McClintock's farthest the following entry under date of June 20th: "Passed our encampment of June 15th at seven o'clock and encamped at eight beside the cairn. . . . Placed a record in the cairn."

All of McClintock's polar work, and indeed his whole career, shows that no man could have been more truthful or scrupulously honest. Yet we find him here apparently contradicting himself. His published diary says he placed the record in the cairn June 20th on his return from the west. But the record itself, in his indubitable handwriting, is dated "15th June, P. M." and speaks of the journey to the west as in the future. ("I am about to proceed to the westward.")

Evidently what happened was this: He wrote the record on June 15th and gave it to the men whom he had detailed to build the cairn before they started back towards Melville Island. Then he proceeded west before the others had built it. On his way back he visited it. At no time did he think of entering in his diary the fact that he had written a record to be deposited in it. Some two years later, when his memory of the less important details of the trip had become hazy, he was preparing his diary for the press. He then recalled having left a record at the north end of Prince Patrick Island, and his memory played him the trick of making a thing that had happened on the advance journey seem to have happened on the return. Or else he wrote the record on June 15th but carried it with him to his farthest west, depositing it only on the return journey.

I have dwelt on this trivial discrepancy, apparent or real, between two statements exactly because their author cannot be suspected of either untruthfulness or carelessness. What I intend is to point out how errors will creep in. I have no doubt that a keen critic can find such discrepancies and perhaps more serious ones either in this book or between it and something else I have written. But I hope that every such discrepancy is open to a reasonably charitable interpretation.

After we had reread and talked over the McClintock record we composed the following document for the next explorer who comes along. Surely it will remain in the cairn much less than sixty-two years. I hope so, otherwise he who uncovers it will fail to find anything legible. McClintock had brought with him for the purpose the papier maché tubes which have preserved his messages so admirably; we had nothing intended for a similar service and had to use tin cans. I did not enter in my diary the exact way this record was packed, except to say that the outer covering was a two-pound tin that once contained coffee. Inside I think the slip of paper was first wrapped in more paper and then put in a small Burroughs-Wellcome tabloid tea-box:

## COPY OF RECORD

"P. M. June 16, 1915.

"A sled party of the Canadian Arctic Expedition H.M.G.S. *Mary Sachs* are camped on the island which bears 192° magnetic from this point, distant two miles. From that island I saw a cairn at this point (Cape McClintock) and walked over, arriving at the cairn at 9:58 P. M. June 15th, local apparent time. On top the sand under the stones I found a record form of the Franklin Search containing printed information as to ships, depots, rescue operations, etc., some illegible writing in ink and the below in pencil, well preserved: (Print is underscored in the following.)

(Here follows copy of pencil part of McClintock's record)

"I am taking the original records to be stored or otherwise suitably disposed of by the Department of Naval Service of Canada, and am leaving this copy in a cairn built of the same stones on the same spot.

"Our party consists of these members of the Canadian Arctic Expedition: S. Storkerson, O. Andreasen, C. Thomsen and V. Stefansson. We left the winter quarters of the *Mary Sachs* on Banks Island February 20, 1915, and Cape Alfred April 5th, reached farthest west at sea in about W. Long. 131° and farthest north in N. Lat. 76° 40′. Were driven south again by contrary currents, landed on Prince Patrick Island in N. Lat. 76° 09.′ approx. and have followed the coast, mapping the unexplored part as well as our means and continual thick weather allowed. Intend to proceed a few miles beyond Ireland's Eye, thence SE and S across Melville Island and Banks Island to the winter quarters of the expedition. We are living on seals and burning blubber. Men all well and gear in good condition.

"Expect to leave the camp on the island the forenoon of June 17th, following the floe edge north beyond Ireland's Eye."

This document was signed by all of us.

One of McClintock's claims to preëminence among arctic travelers is that he was among the first to realize the possibility of lengthening his journeys both in time and mileage through hunting. Still it may be fairly said that several of his young contemporaries of the Franklin Search were brought by similar facts to the same conclusion equally early—for instance, Mecham,* Osborn and Bedford Pim.

In the summary of his journey to Prince Patrick Island McClintock says, "We were most fortunate in securing game, which enabled us to remain out ten days longer than I otherwise could have done." ** Turning to the table he publishes, we see that he secured in Prince Patrick Island during forty-six days spent there three polar cattle, five caribou, one hare, two geese and nine ptarmigan. These would not have enabled him to lengthen his journey by ten per cent.; what enabled him was the meat of cattle and caribou killed before leaving Melville Island on the outward journey, and after reaching it on his way home.

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* Mecham appreciated game both because it enabled him to lengthen his journeys and because of the excellent effect upon the health of his men. On page 523 of "Further Papers Relative to the Recent Arctic Expeditions in Search of Sir John Franklin," London, 1855, he says, "It is to me very evident that without occasional supplies of game, a long journey would be a very doubtful experiment."

** *Op. cit.*, p. 585.

But he goes on to say:* "But no fuel of any kind could be got (in Prince Patrick Island)." This brings out strikingly what it would have meant to him had some one in his party understood sealing. In his table of "Animals Seen" he notes eighteen seals, none of which could be killed. A good seal hunter should have secured at least twelve of them, yielding 600 to 900 pounds of blubber, about equal in heat value to that much of the fuel McClintock had brought from his ship to last for over a hundred days. In other words, these seals represented more fuel than he used on his whole journey, fuel which could have been picked up along the way when needed instead of being laboriously hauled by man-power through hundreds of miles of soft snow. And if McClintock, when he was not particularly looking for seals, saw eighteen, he would have seen many times that number had he been depending on them.

It does seem a pity that progress has to be so slow. If the men of the Franklin Search could only have rid themselves wholly, as McClintock did in part, of the idea that the Arctic is insufficiently stocked with food and fuel, it would have changed the whole aspect of the Search. A few score young men needed only to spend several months learning native Eskimo methods of hunting, house-building, etc.—they did not have to learn how to burn seal oil, for seal oil is but train oil, which they already knew how to burn for it was commonly used for light in those days. Then they could have traveled where they needed to travel, comfortable, well-fed and safe.

And if the idea of the barrenness of the Arctic could have been shed a decade earlier there would have been no Franklin Search, for Franklin's men would not have starved to death, as we now know they did, in a region where game is abundant.**

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* "Further Papers Relative to the Recent Arctic Expeditions in Search of Sir John Franklin," p. 585.

** I have said something of this sort before and a critic has replied under three heads: (1) "He who says Franklin's men could have lived by hunting overlooks the terrible handicap of numbers"—but the crews could have scattered in small parties; also Eskimos sometimes live in parties more numerous than Franklin's crews. (2) "Eskimos are skilled hunters, but Englishmen are not,"—but I have seen young boys from cities become expert sealers in a few weeks. (3) "Franklin's men were weakened by scurvy,"—but they would have had no scurvy had they lived on fresh game. (On the last head see my article on scurvy in the "Journal of the American Medical Association," November 23, 1918).

# CHAPTER XXXIII

## THE DISCOVERY OF NEW LAND

JUNE 17th, after directing the men to proceed straight north all day if traveling conditions allowed, I left camp while they were hitching up the dogs, walked two miles southeast to Cape McClintock, rebuilt the cairn and put in it our record to replace the one we had found. Then I struck north, having previously seen that our teams were already on their northward way to the west of me.

I walked first to the nearest of McClintock's "Polynia Islands." He has not told us why he named them so. Of itself the name is a monument to one of the respected dead among polar theories. I have heard that the word is of Russian origin and refers to an open water space among ice. But as applied in the polar speculation of McClintock's time it signified the open spaces that were thought to exist permanently ice-free in the most northern latitudes. The largest of these open spaces was supposed to be around the Pole. There was much high authority back of this idea in the schools and among scientists. Especially there was the weighty German geographer, Petermann. Some even thought they had seen the thing itself and so proved it—for instance, the American explorer Hayes, who made of his observations and beliefs a book called "The Open Polar Sea."

Walking towards the islands I wondered if McClintock's men had perhaps seen water-sky to the northwest of them and assumed it hung over a "polynia." I could see water-sky in that direction, but I knew it was merely our friend the "shore lead," open now temporarily because of the wind. On the second and largest Polynia Island I must have walked within a hundred yards of one of McClintock's records—I know it now from seeing his diary, but at that time I did not think he would have left one so near to the other which we had already found.

Beyond the big Polynia Island I had no difficulty in recognizing the "reefs lying to the northward" mentioned in the record we had found and shown on the Admiralty chart we carried. McClintock in his manuscript diary, I now know, refers to them as "three reefs," and three they were and there they were. But about "Ireland's Eye" I could not be so certain, for there were several more "reefs" of the same sort. Later, however, we identified tentatively as Ireland's Eye an island lying a good deal farther from McClintock's three reefs than the chart indicated and more to the east. At least it appears a real island from a distance; the ones lying more nearly where the chart puts Ireland's Eye are mere ridges of gravel scraped up from the shallow sea bottom by the plowing of wind-driven ice.

So far as McClintock's records are concerned, Ireland's Eye is mysterious. His diary as printed in the Parliamentary Blue Books has no hint of such a place. His manuscript diary contains certain notes that have been omitted from the published version or else altered. But I have had opportunity to examine this manuscript carefully and have found no reference to Ireland's Eye nor even compass bearings leading in that direction. At one time we did think we had found something referring to it, but this was later clearly identified as the little unnamed island which appears on the Admiralty chart as about twenty miles straight south of Ireland's Eye. In the manuscript map the line of the heavy pack ice is indicated as curving north of the three reefs, which appear exactly as they do on the Admiralty chart. The published chart does not reproduce this line of heavy ice, but if it were transferred there it would curve around north of Ireland's Eye. From this one might conclude that Ireland's Eye is one of the reefs noted by us in about this position.

Yet Ireland's Eye on the Admiralty chart is evidently intended to be something more than a reef, for the south side of it is marked plainly while the north side is dotted in, indicating that the extent of the land was unknown. It is this feature which makes us identify it, provisionally, not with one of the reefs but with an island we saw lying considerably to the east.

It occurred to me that Ireland's Eye might have been reported by some of the men whom McClintock detached to send towards Melville Island at the time when he with two companions proceeded westward from Cape McClintock. We were able to find in the diary a summary of the report of these men when he overtook them, but no mention of their having seen any land previously not noted by McClintock. I have appealed in this connection to the Royal Geographical Society, but a search through all records available to them leads only to the same results: Ireland's Eye is upon the map but no one knows whence it came or how it got there.

From the west end of the largest of McClintock's Polynia Islands I could see the sledges to the northwest traveling along steadily and leaving me farther and farther behind, for I spent a great deal of time in taking cross bearings not only of the islands laid down by McClintock to verify their position, but also of several islands or reefs which he had not seen. Apparently we were more fortunate than he had been in the conditions of visibility; indeed this was one of the best days we had in the vicinity of Prince Patrick Island. Although the sky was mainly clouded one could see a considerable distance, and sufficient light came from one quarter of the sky so that shadows enough were cast to make even white objects visible.

I traveled about fifteen miles a trifle east of north from Cape McClintock when I saw the men making camp about five miles north. They had been compelled to turn slightly to the eastward because of the trend of the shore floe, which was reflected in the sky as a dark streak and which showed its presence not far away by the roughness of the ice.

It becomes second nature after long years of hunting in the North to spend much time in examining from any available eminence every part of the landscape. I was on the top of a hummock twenty or thirty feet high and had already taken bearings of every landmark in sight. Prince Patrick Island to the south had disappeared, either because it was low or because the conditions of visibility were not so good in that direction. But I could still see the islands just northwest of Cape McClintock from which we had started that morning. I next turned the glasses to the west, examining the region of the shore floe for possible seals. Polar bears I was not expecting, for we had not seen the tracks of a single one since landing at the southeast corner of Prince Patrick Island, and seals were not likely to be out at this time of night—about two in the morning of June 18th. Seals may lie on the ice twelve or fifteen or even twenty hours but they will usually go down for a feed somewhere around midnight. That they go down in search of food after their long basking periods is reasonable on the face of it. We have direct evidence also. When a seal is killed in the early morning after he has just come up on the ice we usually find in his stomach undigested and partly digested shrimps and other crustacea.

I did not see any seals, and I had already been examining the horizon to the eastward in connection with taking the bearings of the scattered reefs and islands. I next turned to the north where undiscovered land seemed most likely to lie. Nothing could be seen on the horizon, but our camp was in the line of vision and I noted what was going on.

The tent was up—we had long since ceased using snowhouses on account of the mild weather—and the dogs had been tied. Thomsen was feeding them. Ole was not in sight and must be in the tent cooking. This meant that he had decided to use up our last kerosene. One evening many weeks before we had discovered only a remaining quart or so of kerosene and it had been decided to save this for an emergency when bad weather made it more comfortable to cook within doors. Kerosene has the great advantage over seal oil that when one has the ordinary commercial stove it produces no smoke, while the highest art is required to burn seal oil without smoke. But a day or two ago somebody had noticed that half the cherished kerosene had been spilled, as the container was not quite tight at the top. This meant not only loss of fuel but worse, for any oil that was spilling was getting into our clothing and into other things we were hauling. Trying to save it was less a convenience than a nuisance.

Presently I moved the glasses one field to the west and noted that Storkerson was climbing an ice hummock. Evidently I could borrow his eyes by watching him, for he had the advantage of me by five miles of northing and would be able to see things that lay below my horizon. If there were anything of note I should be able to tell it from his actions. It is easy to say now and I can almost make myself believe that I had a premonition of what he was going to see. Still I know that such was not really the case. I had often before watched my companions from a distance as I was doing now to form an opinion of what they were seeing.

Storkerson sat down on the top of the hummock, took his glasses from their case and spent several minutes in wiping every lens of them with our unfailing piece of clean flannel, then raised his elbows on his knees in the ordinary way and turned his glasses to the north. Evidently he saw nothing in the first field nor in the second or third, for during the next four or five minutes he moved the glasses farther and farther east until he was facing northeast. Instead of examining this field as he had done the others he swung the glasses slowly into east and then into southeast, following something that was very plain and needed no careful scrutiny. With the glasses still at his eyes he then made a movement which I interpreted to mean that he was shouting, and when I turned my glasses on the camp Ole was scrambling out of the tent and Thomsen had stopped his dog feeding and was looking at Storkerson. A moment later both of them started towards him on the run.

This could mean only one thing—a new land a great deal larger than any of the scattered islands we had been seeing all day. I stood up on my hummock and looked carefully from northeast to east but nothing could be seen but the level horizon. The greater height of Storkerson's hummock and the five-mile advantage in position accounted for the difference.

Now I started for the camp—that I did not run was a matter of deliberate intent. That a big new land could actually have been found seemed too good to be true. The behavior of Storkerson and the others was open to no other logical interpretation, but I decided to pretend to be illogical for the moment, attempting to guard against a possible reaction.

But Storkerson came to meet me along the sled trail, which he never would have done under ordinary circumstances, while Thomsen and Ole had opened up the sled loads which had already been covered and lashed for the night. This I understood also, for they were Norwegians and Norwegians are the greatest people in the world for celebrating every conceivable happening by some sort of feast. Evidently they were hunting for something special to eat and I knew what it would be. There was a big packing box which had formerly contained biscuits but in which we had for a long time been carrying something else. There were a few biscuit crumbs in the corners and so it had to be emptied of the goods packed in it and these crumbs scraped together. The saving of the crumbs had been accidental but we had saved deliberately a little malted milk on the theory that somebody might get sick, though it is almost inconceivable in such work, done under such disease-forbidding conditions, that any one in normal health should lose it. I always feel hoarding food as a mental strain, and for that reason I was delighted when I found that Ole had the milk boiling.

We first went up on the hummock, all of us, and took turns in looking at the new land. It lay indubitable along the horizon from northeast to east by north, but no straining of the eye could reveal any land farther north or farther south. After careful compass bearings and a sketch of the sky line, we went into the tent and celebrated with a sort of stew or soup made of the malted milk and the crumbs. I don't think any of us considered this a better meal than seal meat, but it was different. We had therefore some of the psychological elements of a celebration.

We slept less than usual because of the excitement, and at five in the afternoon of June 18th started towards the land. After about a mile and a half a seal hole appeared which gave opportunity for sounding. The depth was 69 fathoms and there was a strong current running a little west of north. There must be a fairly deep strait between our new land and Prince Patrick Island, for otherwise the current could scarcely have had such force. This is our only evidence for thinking that the strait may be deep; apart from that we would suppose it to be shallow, for certainly it is studded with islands and reefs.

Seven and a half miles ENE from camp we came to one of the gravel islands that form a sort of chain from Prince Patrick Island to our new land. Their position may be more accurately indicated by saying that a line drawn through them would be tangent to the west sides both of Prince Patrick Island and the new land.

It is about five miles from this particular islet to the mainland. The sleds landed about straight east of it, but I walked more to the north, for in that direction was the highest visible hill. I had great hopes of what I might see from the top of this hill, but by the time I got there the regular half fog had descended again. I could see little black dots and horizontal black lines which appeared as if they were floating in the sky but which I knew to be the tops of hills from which the sun had removed the snow. Under such conditions not much that is profitable can be learned, and the only significant thing was the trend of the water sky, which was running a little west of north to a distance which I estimated by the elevation of the black reflection in the sky at about fifteen miles. To be able to see so little on the first day was disappointing but we hoped for better things to-morrow.

The hope was disappointed, for the morrow came cloudy and obscure. We should have liked to remain in camp here long enough for the sun to come out so that we might locate exactly both in latitude and longitude the spot of our landing. But summer was advancing so rapidly and the need of returning to the base at Kellett had become so pressing that we did not dare to wait. There was also the palliating circumstance that we had been able to secure good observations at our island base near Cape McClintock, and that on the march north on the 17th and again to the new land on the 18th we had been able to take many compass observations, both direct and cross bearings, so that we thought our estimates would not be out as to either latitude or longitude by more than two miles at the most.

We got up early in the morning of the 19th—ordinarily we were sleeping daytimes and traveling at night—and were able to secure an indifferent time sight, for the sun was faintly visible through clouds. But at noon we got no latitude sight and in the afternoon no confirmatory time sight. We could not wait longer.

Before leaving we heaped up gravel into a mound three or four feet high and placed in it the following record:

*"June 20, 2 A. M.*

"This land was first seen, so far as I know, by Storker Storkerson of the Canadian Arctic Expedition, June 18, 1915, at 2 A. M. from a point on the ice distant from the cairn where this record is left about fourteen miles due west (true). From an ice cake about 40 ft. high, land was seen extending from E x N to NE x E. The first man to land here was Ole Andreasen of the same Expedition at 1:50 A. M. June 19th.

"By authority especially vested in me for that purpose, I have to-day hoisted the flag of the Empire and have taken possession of the land in the name of His Majesty King George V on behalf of the Dominion of Canada.

"Vilhjalmur Stefansson,
"Commander,
"Canadian Arctic Expedition,

"Witnesses: Storker Storkerson, Ole Andreasen, Karl Thomsen."

"Party, dogs (13) and equipment, all well. Shall proceed eastward along this coast some distance, should it prove extensive, and then south across or around Melville Island to the Expedition headquarters near Cape Kellett, Banks Island.

V. Stefansson."

## CHAPTER XXXIV

### EXPLORING THE NEW LAND

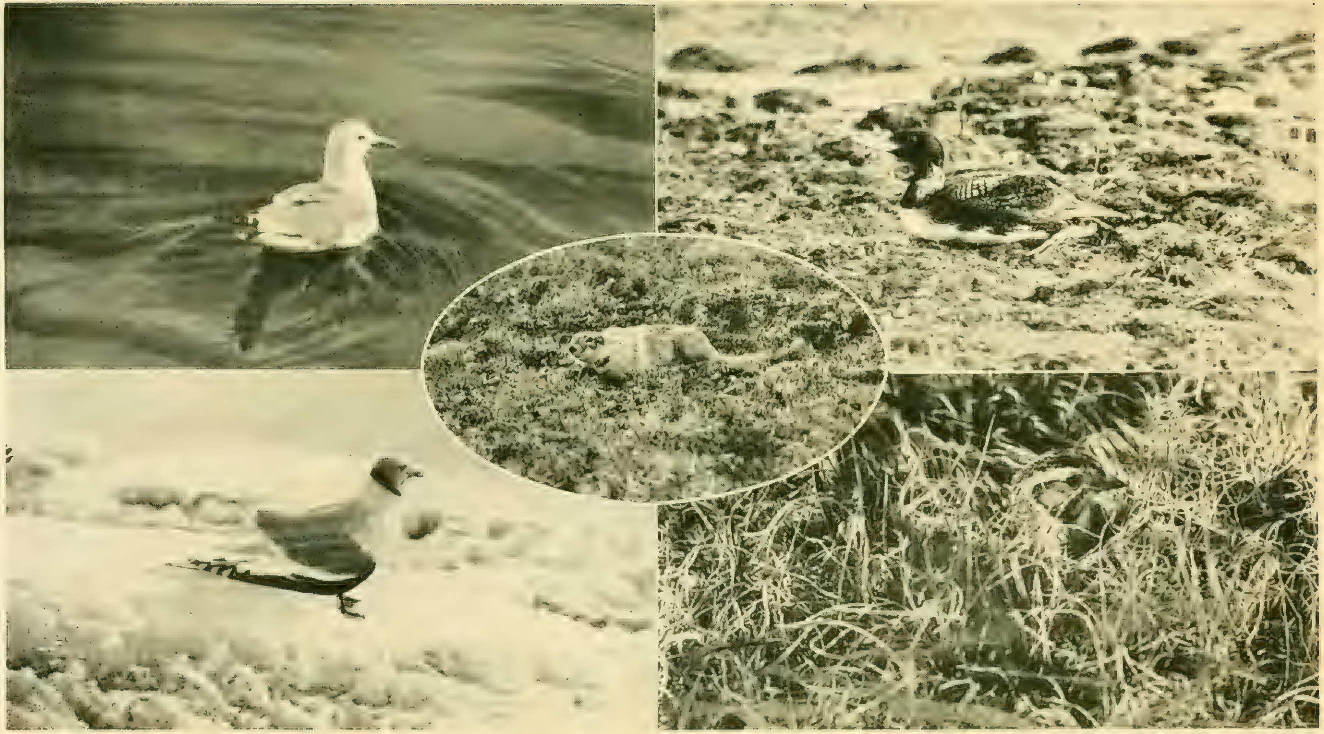
WHERE we landed first the coast line is made up generally of rounded gravel banks, few of them more than ten or fifteen feet high, and on my walk inland the first day I estimated that the rise of land even in the direction of the most conspicuous hill was not more than fifty feet to the mile.

A little earlier in the year we should undoubtedly have traveled north along the west coast of our land, but the need of returning to our base decided us upon a course in the other direction. After waiting vainly through the whole day of June 19th for the sun to peep out and give a chance for an observation, we took a little nap in the evening and at three in the morning started southeastward following the coast. At first it was cloudy with the conditions of visibility not quite as bad as the worst we were used to. About all we learned concerning the land at first was that the coast gets gradually a little higher, but as the day advanced we began to see both the coast line ahead and some islands to the southwest, notably the one which we have identified as Ireland's Eye and which we judge to be about ten miles from the coast. About northeast of Ireland's Eye the weather cleared enough for us to make sure of being in the mouth of a bay. It was still hazy inland so that we were not equally sure of our supposition that this bay is the mouth of a river.

What interested us most about the land were the various signs of life, both vegetable and animal. We saw no driftwood, possibly because the beach was heavily covered with snow. Nevertheless from our general knowledge of this vicinity we are prepared to believe that there is very little. On the land was grass in some places and lichens and mosses were in others, but what was more convincing in this respect was the great number of caribou tracks preserved in the mud from the previous summer. We all agreed that in no part of Banks Island had we ever seen caribou tracks so numerous. From the fact that no horns were found we deduced that the bulls are not here in January nor the cows in May, those being the shedding periods for adults of the two sexes. Later, however, in other parts of this land we found caribou horns, so we know it was mere accident that none were noted the first summer. Caribou, then, are in these islands at all seasons. The caribou traces seen that first day were mainly from the months of June and July of the previous year, as we could tell by the size of the footprints of the newborn caribou. There were no large footprints. From this we inferred that the country is generally rocky, for hoofs are large when caribou feed in swampy territory and are worn down smaller the rougher and stonier their pasture.

In walking about we noticed a lemming running over the ground. One of our dogs named Hans was known for the gingerly way in which he killed lemmings. Indeed whenever he killed small animals he did it in such a way as not to injure the skin and to leave it in good condition for the zoölogist. We had just turned Hans loose but he had not yet seen the lemming when an ivory gull appeared suddenly from nowhere and stooped towards it. Fearful of losing the lemming, we all shouted and ran towards the gull. Our action may have been the cause or it may be their regular habit, but this gull gave the lemming one peck in passing, leaving it paralyzed though not dead, and then flew away as if she had no concern either with the lemming or with us. Foxes have a habit of killing lemmings and leaving them behind if they don't happen to be hungry and it is possible that gulls have a similar habit. We later found on examining the nests of the ivory gulls, not only those occupied at the time but also remnants of the nests of other years, that they feed on lemmings; indeed, it is likely that in these latitudes in the early spring the lemming is their only food.

During the entire time we spent on the new land caribou traces continued to appear more numerous than on Banks Island. The only animals seen, however, were two bulls and these were observed only through the glasses at a distance of seven or eight miles. We were picking up seals right in our road and did not care to bother to go after caribou far inland and out of the way. No traces of cattle were on the mainland although we later found one ancient and decayed skull on the island to the south which we have named Eight Bears Island. Lemming signs were in most places numerous and the exgorgitations of owls indicated that at certain seasons they are there to feed on the lemmings. On June 19th a jaeger gull appeared and on June 21st four more. Besides ivory gulls there were others of a larger variety, perhaps the Barrow gull, and there were a good many snow buntings and longspurs.



1. Herring Gull.
2. Sabine's Gull.
3. Yellow-billed Loon.
4. Lapland Longspur.
5. Parry's Spermophile.

A Young Owl on the Arctic Prairie.

We saw no ptarmigan although two years later one flock was observed in the same island. And we saw no Hutchins geese but found their feathers here and there, and later observations showed that they nest both here and farther north. Of seals we saw about a dozen per day. Most of these, however, were seen only through the field glasses and a party traveling along the coast might easily fail to see any for several days at a time if no pains were taken to look for them.

We saw no hares nor do I remember seeing any traces of them later. Foxes did not appear to be numerous as compared, for instance, with Banks Island. Polar bears while not absent are evidently exceedingly rare. On all our visits to this neighborhood in succeeding years we never saw a bear, but in 1916 we found in the frozen mud near the west coast the tracks of a bear that had been there the previous summer. Only two wolves were actually seen on this first visit but their traces were numerous, as had to be the case where caribou were so plentiful.

There has been much talk about the wisdom of foxes. In ancient fables and modern nature-faking alike they are invariably wise. Possibly the southern fox is by nature more intelligent than his arctic cousin or it may be that experience has taught him more through a dangerous environment. But the verdict must be that in the North foxes are stupid, or trustful if you prefer that point of view. A fox that sees you is very likely to come up to examine you more closely. If he finds your trail he may follow it till he catches up and if he is a young fox he may run ahead and in circles around you for miles, barking like a toy dog at a pedestrian. It is remarkable that they should be so foolish for they are continually when on land in danger from the wolves that snap them up as an appetizer before breakfast.

It would seem reasonable that wolves would not be afraid of any living thing they find, for in reality their only danger arises from failure to find something. They can run faster than all animals that are more powerful, and they are more powerful than any animal that can run faster. This would make it probable that a wolf would come running up frankly to any animal he sees, for he has a right to conclude that if the animal is dangerous he will be able to avoid it easily. My experience with the northern wolf is that this is just what he does not do.

The first day of our travel along the new land I was walking across the foot of a bay, while the sledges several miles outside were following a course touching only the capes and points of the coast. I saw a wolf at about half a mile and he apparently saw me at the same distance, for I was black and moving against the hillside that was already speckled with the black patches of the spring thaw. After watching me a while he came towards me at a sedate lope until about three hundred yards away. Then he noted something peculiar in my actions, which of itself shows a high grade of intelligence, for it is fairly certain that the only dark animals he had ever seen were either ovibos or caribou. The former he regards with respect and never attempts to attack, but it cannot be supposed that he is afraid of them, for while they are powerful and have a good defense against wolves they are too clumsy to be dangerous on the offensive. Caribou, on the other hand, are his regular food, and in the northern islands at every season except summer must furnish more than 99 per cent. of it.

When the wolf stopped I stopped also. After he had watched me for a minute he commenced to circle to get my wind. As soon as he was sufficiently to leeward he stopped to sniff what must have been to him a strange scent. Just as soon as he had his mind made up that it was strange he went off at a lope. And it seemed to me as I watched him that he was using a good deal of will power to keep himself at a fairly dignified gait.

In places equally distant from human beings I have often since met wolves singly or in pairs and have found them equally cautious. Sometimes they are in bands of eight or ten, presumably the parents and the family of grown-up pups, and on such occasions they may come a little closer but seldom within 150 yards, if in the open. In the woods, as for instance near Bear Lake, they will approach closer, especially the family groups if the pups are well grown.

At noon on June 20th we found ourselves on the west coast of what appeared to be a bay fifteen miles or more across and obviously a great deal deeper than that, for no land could be seen towards the bottom of it. The weather had cleared and visibility was excellent. We would have liked to continue traveling but the opportunity was too good to lose and we stopped to get a very good determination of latitude and longitude.

From this observation camp I walked a short distance inland, both to get some idea of the elevation and to secure a view, especially for islands to the south. Measured by the aneroid, the land rose to 75 feet a hundred yards from the beach and to 175 feet four hundred yards inland. A mile or two inland it was probably 500 to 800 feet high, in places rolling grassy prairie, but in other places there was but little vegetation on a surface of limestone that had been split into fragments by the frosts of winter.

From the 175-foot elevation I was able to see Prince Patrick Island plainly to the southwest, but there was fog hanging lower on the ice so that intervening islands could not be made out. To the south I could see two islands and made the correct judgment that one of them would be Fitzwilliam Owen Island of McClintock and that the other a little to the east was new, later named Eight Bears Island. Across an apparent bay in the coast we were following I could see the land continue its trend to the southeast.

The next day we crossed the "bay" (which later proved a strait) and found it to be about sixteen miles wide in a direct line SE from our camp of June 20th to the one of June 21st. On the way across I had an experience which illustrates how easily one may be deceived into misidentifying even things seen in fairly clear weather.

Baron Nordenskiold tells of mistaking a walrus for an island and identifying the white tusks with two extensive glaciers coming down between mountain ranges to the coast. Hanbury tells of mistaking a mouse for a polar ox, and Godfred Hansen describes how his dogs ran up to and killed a polar bear which turned out to be a fox. Similarly, I had myself on a previous expedition mistaken a marmot (*citellus parryi*) for a grizzly bear.

From what I had already seen my mind was made up that this was an extensive land, and was thinking about how large it might be as I was walking across the bay, following a course somewhat more northerly than that of the sledges. I had almost reached the beach on the east side and was just rounding a point when I looked to the north and saw on the other side of the next low point the top of a pressure ridge of sea ice. Then the land was not so very large, or at any rate there was a deep fjord running into it from the opposite side, for here I was looking across a low neck of land at the sea ice on the other side. This was a discovery not very pleasing, for although the scientific attitude is to be satisfied with the truth whatever it is, still I knew very well the achievement of finding the absence of land is not popularly valued as highly as demonstrating the presence of it, and the bigger the land the greater the fame attached to the discovery. I was a bit disconsolate when I turned to the left, deciding that I would actually cross the neck of land and measure in paces the distance from sea ice to sea ice.

But when I came to the top of the low ridge which had appeared to separate me from the pressure ice, I found a shallow depression beyond and then another ridge, with my ice still behind that one. So the width of the neck of land was not a few yards but perhaps half a mile or a mile. But when I came to the top of the second ridge the ice was behind a third one, and it was only when I got to the top of that and had walked a mile or two that I realized that what I was looking at was not pressure ice at all but the top of a mountain peak. It might be supposed that I who had seen thousands of pressure ridges under all sorts of conditions during many years would not be so deceived, especially against the trend of my desires.

When I realized that here was a mountain peak I turned to climb the nearest high hill and from an elevation of three or four hundred feet made sure of all my surroundings. Seven or eight miles to the south the men were already pitching camp. It was a little after midnight. The sky was clear and visibility promised to be excellent. I made up my mind to go to the top of the mountain, seizing this rare opportunity to learn much about our surroundings in a little while.

It was now the 21st of June, "the longest day of the year" in places where nights are dark, and it promised to be the first really warm day of our experience. But as I proceeded overland I could see that there must have been several warm days here, for little lakes of water in the low places and some of the smaller creeks were beginning to run. The walking could scarcely have been worse. Where the ground was bare the sticky clay stuck to my feet till they weighed each ten or fifteen additional pounds. Where the snow remained it was so soft that at every step I sank deep and occasionally up to the hips. In a few places walking was actually dangerous, for where there is a deep snowbank running from a hill out into a lake it is possible to sink in ten or fifteen feet of slush as one might in quicksand. I was naturally on my guard, for the condition was not new to me, but in several cases I had to cross ravines on top of snow where a brook was running through a tunnel underneath. Every one of such crossings had a danger which I realized fully.

When I recognized my pressure ridge for a mountain I had estimated it to be six or eight miles away, but I walked six miles and another six and still the peak was far ahead. Eventually after twenty miles of walking I got to the top of it. But not quite soon enough. The wind was beginning to blow from the northwest and had already rolled a cloud of fog in from the sea that hid everything lying between the north and northwest. There was not much use looking to west or southwest, for that was the district from which we had come. To the south I had already had a good look from the observation spot, so that the new and fruitful fields lay to the northeast and east. In those directions I saw high hills or low mountains rising one behind the other until the farthest ones were blue in the distance. I estimated that these were at least fifty miles away from my mountain to which I gave the name of Leffingwell Crags after Ernest de Koven Leffingwell now of Pasadena, California, one of the joint commanders of the first polar expedition of which I was a member—The Leffingwell-Mikkelsen Expedition of 1906-7.

To the south I could see camp from the top of the crag although it was so far away that I could not have identified it apart from my knowledge of where it ought to be. The tent, sledges and everything together were visible through my powerful binoculars as a mere dark speck. I was able, however, to get an exact compass bearing so as to make a direct course. Towards morning it had frozen a little and I found the walking less bad, and the land was also more level. It was ten minutes before noon when I started for home and I arrived there after seven hours and thirty-five minutes more of steady walking.

Within a mile of the camp I saw the men beginning to hitch up a dog team attached to a light sled. I knew this meant that they had been beginning to worry about me and had decided to go out for a search. They had first waited supper a long time, then they had gone to bed and slept ten hours, after which they had had breakfast and waited around an hour or two and finally made up their minds that something had to be done.

One might think that my companions would have had enough experience by now not to worry over my absence for twenty hours in good weather. This was one bit of hunter's wisdom which they had so far refused to absorb, although all of them learned it later. During my second year with the Eskimos I had been with a deer-hunting group in northern Alaska who still kept the ancient custom of beginning the hunt without breakfast. It was etiquette there that the hunters would get up stealthily while everyone else in the house was asleep and start for the hunt without touching food. It was considered effeminate to do otherwise. On a theory which I have found to work invariably, I decided that if this custom was all right for them it would be all right for me, and I found that it took but a few days of practice until I could quite as easily as they make a ten or fifteen-hour hunt without breakfast and come home at the end with nothing more than a good appetite. It was part of the same etiquette to eat twice in the evening. The women were supposed to have a sort of intuition by which they knew how to have a meal ready when the hunters came home and nearly always we got our food within the first half hour. Three or four hours later we would have a second meal before going to bed. I do not know, or rather I do know, what the orthodox hygienists would say about such things, but I have found the practice to work well, and after all that is the test.

In my diary I read as follows: "On arrival at camp I found the men had been about to start for a search expedition when they saw me coming. They had had supper and ten hours' sleep and breakfast. Apparently they think a man will collapse from hunger after he has been six hours without a snack. I can't get them out of the idea that a meal every five or six hours is necessary. I find twenty hours no hardship so long as my mind is on my job, although when in camp I feel like eating every three or four hours."

The walk overland with sticky mud on my feet and a ripple of brooks in my ears had convinced me that we had better hurry south. The special point of danger was that if we were too late we might be unable to cross McClure Strait from Melville Island to Banks Island. It was also possible that whaling ships might come to Kellett in early August and we wanted to be at home to make certain purchases and possibly engage a few men to help us. We also expected Wilkins with the *North Star* in early September and I wanted to be there to meet him so he would not be compelled to wait, for it was my intention to board the *Star* with two dog teams and three or four of the men best adapted to sledge travel and proceed as far north as possible. Accordingly, I asked Storkerson and Thomsen to take the sled which they had been hitching up to search for me and proceed with it eastward to spy out the land, having in mind that they had to be back in time for a short sleep before we started out in the evening for home.

Storkerson returning reported that he had gone about fifteen miles east and that from the top of a hill two or three hundred feet high he had seen land twenty or thirty miles farther to the east. To the south he had seen islands which we had noted a day or two before and beyond them a more distant and larger land which was probably Emerald Isle. This latter he had seen in a sort of mirage.

I had a feeling that leaving a newly-discovered land of unknown extent so soon after finding it needed some justification, and I made the following lengthy and rather formal entry in my diary:

"DETERMINE TO TURN HOME

"The season when survey work can best be done here is just beginning, there are plenty of caribou on land and seals on the sea ice, so food and fuel are assured, but I have nevertheless decided to turn with the sun on June 22nd and follow her south to Kellett. The reasons, in the order in which they most obtrude themselves on me now, are:

"I. If we follow the coastline farther east we get Melville Island between us and home, and I have become convinced that crossing it would at this season be difficult. For the land is mapped rugged in many places and if it were to prove like the land near the Leffingwell Crags, even the ten miles—if correct—where the chart shows Melville Island narrowest would be nearly half a month's task to cross, judging from my previous experience with sleds in rugged, muddy and stony land in summer. We should therefore, if we went farther, have to double back on our trail when we finally turned home or else go east around Melville Island.

"II. If we turn now we may hope to reach Kellett by ice all the way. Thus we could probably be home before July 15, and could on the way determine the NW coast of Banks Island instrumentally—it seems to be considerably out in longitude, and this it is as important to correct as to map new land. If we delay much beyond this date we can hope to have the ice take us no farther than say the Bay of Mercy, whence we should have to 'pack dogs' overland, at the rate of 8 miles per day or so. This would be an added delay of two weeks perhaps and we might miss early ships that come to Banks Island—if any do come.

"III. It is necessary to start home soon to be at Kellett to meet the *North Star* if she finds an early season. It is even more necessary now than last year (if that were possible) to have a more northerly base, and for this the *Star* is our only present hope.

"IV. Starting home now promises to land me at Kellett in time to make out my reports to the Government to send should a whaler touch at Kellett—an important matter, as the plan I had when I left Kellett last February was to go myself for the *Star* to Coronation Gulf and I left some of the financial part of my report to be completed then. On deciding to send Wilkins in my stead I had to leave these reports at loose ends.

"V. If we go home now the trip should not prove very difficult, and the men are getting to show the strain of the long trip. We are over four months out now. If I work them too hard now they may rebel at going next year, and the trip west from Land's End is still to make.

"VI. The trip west from Land's End must be made next year, *Star* or no *Star*. To be prepared for her not coming we must get home to dry meat for use as dog feed on the ice. In any case she will probably not bring us skins for clothing and we must secure and dress enough caribou and seals for winter clothing and spring water boots for next year.

"VII. Bernard and Levi are alone at home and there is much work of many kinds to do, so we are all urgently needed there.

"VIII. My own especial scientific interests are in the archæology of these lands and I want a week or two to dig at Kellett in the old village. It is possible I may learn something there which, when co-ordinated with my own previous work on the mainland and that of Jenness in Victoria Island and on the mainland, may lead to enlightening results.

"IX. The men are out of tobacco and Thomsen (who still has a little from Ole) seems to take this hard. Then all of them are 'homesick' for the fleshpots of Kellett. Storkerson is the only one of the three who has imagination to see anything in exploration beyond hard and disagreeable work.

"It is to be noted that none of the men worry over the question of quantity of food, though Thomsen especially dreads a long siege of 'meat straight.' It is therefore shown that I have at least three disciples who have faith to believe that the rifles will provide food for the morrow."

The evening of June 22nd we started south. From now until we got half-way down the west coast of Melville Island we had conditions which McClintock describes very well in his entry for June 25, 1853. He is speaking then of the vicinity of Emerald Isle and, as it happened, we were in that vicinity the same day of the month but with us, as doubtless with him, the description was applicable to the condition in that general locality for a matter of two weeks. He says:

> "Snow fell throughout the day but the weather now is beautiful. Started across the strait at a quarter before seven for Emerald Isle; we have ten days' provisions to last us to Depot Island. . . . Soon found the floe to be exactly in the condition we expected, the snow upon it partially thawed about knee-deep and the lower six inches saturated with water; our progress therefore was extremely slow. The men worked uncommonly well so that by frequent 'standing pulls' and occasional 'digging out' they got the sledge along about two thirds of a mile in an hour. A thick fog came on shortly after starting and continued throughout the march." *

Although this entry of McClintock's is typical as to weather and conditions of snow, we were in several respects more fortunately situated. Our sledge was pulled by dogs while the men had to pull his. However, our sledge kept sinking in so deep that had it been of ordinary type it would have had to be pulled ahead right through the granular snow, somewhat in the manner of a snowplow. That was the way on the west coast of Banks Island when we were getting ashore in 1914, and so it evidently was with McClintock. But our sledges now had the special "toboggan bottom" so that when the runners had sunk about six inches the snow came in contact with it. They had the merit that they were as good as any ordinary sledge on glare ice or on hard snow, at the same time that they converted themselves into toboggans when they sank deep enough in soft snow. The snow was so soft now that our dogs had very poor footing and the smaller ones floundered about so that they, as well as the sledges, had to be dragged along by the bigger dogs. I have no doubt that but for the toboggan bottoms our progress would have been even slower than McClintock's.

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* "Further Papers Relative to the Recent Arctic Expeditions in Search of Sir John Franklin," London, 1855, p. 574.

Another advantage of our equipment was in the snowshoes and skis. All of us were used to skis from childhood but we had long ago come to the conclusion that in the Arctic they are of little use, and although we had a pair with us we were carrying them mainly because we used them in constructing the frame of our sled boat for crossing open water. The snowshoes were for actual use. Now for the first time conditions appeared where skis were better. The snowshoes would sink into the slush and when you pulled them up you brought up with them a heavy load of it, so that in some places they were worse than useless. The man who had the skis was usually able to glide along on the surface without breaking through, partly because of their greater surface area but mostly because they slide smoothly, while snowshoes have to be lifted up and put down with a sort of stamping motion.

On this journey as on most journeys we kept taking soundings. The depth between the new land and Eight Bears Island was a hundred fathoms. Soundings were taken through seal holes and occasionally we shot the seals for food. We found it an even greater advantage now not to be compelled to haul food with us, and we traveled with the sledges so light that there was seldom more than two or three days' provisions ahead.

On the evening of June 22nd, just before we landed on Eight Bears Island, came perhaps the heaviest fall of snow that I have ever seen and in weather well above freezing, so that in a few minutes we became as soaking wet as if it it had been a tropical shower. When we got to the land we found it clayey and at first everything seemed mud, but one grassy patch made a tolerably comfortable camp spot. When you keep your sleeping gear dry you can always get comfortable by taking off your clothes and going to bed. Winter travel is much more comfortable than summer, but it is rarely indeed that we are uncomfortable even in summer, or if we are it is only a temporary matter, mitigated by the knowledge that we shall presently be comfortable again. It is not much worse than being hungry when you know that a square meal is only a little way off.

"Wednesday, June 23rd," says the diary, "was a day of snow and fog on which we camped early in the morning and slept all day. This makes a bad beginning for a diary volume, but Ole says a bad beginning makes a good ending." This is the first entry of the book that runs from June 23rd to December 6th, 1915. It proved one more old saying to be wrong by ending worse than it began, but it is too early to tell about that now.

June 24th when the weather cleared we could still see the Leffingwell Crags forty or fifty miles to the north. They are the most peculiar and most conspicuous landmark we found on any of the lands we discovered.

Eight Bears Island turned out to be some five or six miles east of McClintock's Fitzwilliam Owen Island. The two are similar though Owen Island is perhaps a little larger. Each is rolling land with grass and moss. Eight Bears Island is less than four miles in its greatest diameter and about two miles wide. Here appeared the first ptarmigan of the year and Thomsen shot one so that we might make sure which kind it was—a rock ptarmigan. We saw also a few dozen Hutchins geese. A dozen seals could be seen from camp and of these Storkerson killed one and Ole another. We did not need two and Ole killed his "for practice." This was the last of the practice hunting.

It was on Eight Bears Island that we found the ancient and far-decayed skull of a female ovibos. I have often wondered how it got there, for this is our only evidence that these animals may migrate from island to island. In our experience they avoid sea ice scrupulously, never going much more than a hundred yards from land. But this cow apparently had come across from some other island, unless she was a survivor from the times when the various islands were a connected land. That is by no means impossible, for although the skull was not petrified, it might have been preserved since half a million years ago, provided that most of that time it had remained embedded in frozen earth to be exposed and thawed out only recently.

Without landing on Fitzwilliam Owen Island we struck SW by W from Eight Bears Island for the NW corner of Emerald Isle, which could not be seen from sea level but was plain when viewed from the top of the island. The next day the sledges traveled along the west coast of Emerald Isle about half a mile from shore while I walked overland. We would have liked to stop and complete the survey begun by McClintock but the late season forbade. The island was well supplied with grass and moss but not as exceptionally as McClintock seems to have wanted to imply by calling it Emerald Isle. It is easy to see from his record that up to this period of his career as an explorer he had seen little if any low or rolling land in summer but had been confined in his summer experience to such rocky lands as Melville Island. Most of the explorers who have been in Melville Island comment on the richness of vegetation there. This is in contrast with our account, for we find it more rocky and with less vegetation to the square mile than almost any other land known to us. This merely means that most other explorers had seen no other arctic land in summer and assumed it to be exceptionally rich in vegetation merely because it contained any at all.

Mecham may have thought that he had found a great exception to ordinary arctic conditions when he wrote for Melville Island, "Sent the sledge across the bay and walked around myself upon a perfect field of grass and moss much resembling a rich meadow. Several musk oxen and reindeer grazing. A large flock of snowy geese flew over." *

This was indeed a great exception to arctic lands as they are supposed to be, but not an exception to arctic lands as they are. But naturally men brought up in such lands as England were incapable of imagining when they were traveling over the snows of winter that under them were grass and moss. They noted these only in summer. Had they done much winter overland traveling they would have seen the grass even at that season, but practically all the exploring which put on the map the islands north of Canada was done by sledges following the coast, touching the land chiefly at the promontories and with only rare excursions upon it. To this Melville Island has been the chief exception, for from Parry

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* "Further Papers Relative to the Recent Arctic Expeditions in Search of Sir John Franklin," London, 1855, p. 533.

(1819) onward it has been frequently crossed in summer and hunted over by the crews of ships wintering there.

As we proceeded south along the west coast of Melville Island we found it beautiful in a way quite different from most of the other northern lands. Banks Island, for instance, has some picturesque cliffs near its south end and also towards the north, but in the main the beauty of Banks Island is that of the rolling prairie, a landscape not commonly appreciated by others than those who happen to have been brought up on prairie land. It is the beauty of openness, fertility and utility. Melville Island, while scarcely alpine in character, has deep gorges, sheer precipices and bold headlands. This leaves no room for extensive grass lands, and the great number of ovibos in the island as compared with most other northern lands is due not to its fertility but to the fact that it has not in recent times been overrun by Eskimos.

But Eskimos have been on Melville Island. We and others before us found traces of them on Liddon Gulf. Similar traces have been found on Byam Martin Island by others and by us on the south coast of Melville Island east of Bridport Inlet. But it is clear that the country was not long inhabited. The reason seems plain.

There are certain groups of Eskimos that live on fish. Probably Melville Island is not well supplied with fish although of that we know little. But most Eskimos live by hunting walrus, seals, caribou, cattle and polar bears. Of these walrus are absent and, so far as my experience goes, Melville Island is the poorest locality in the north for seals with the exception of the north end of Byam Martin Channel. There is some sealing both in Liddon Gulf and in Hecla Bay in spring and rare seals are found elsewhere. Polar bears are not nearly so numerous as in most other arctic localities. Caribou have not been found there in large numbers by us nor are they reported in large numbers by others. Indeed they could not be numerous, since the land is exceptionally infertile.

There remain the polar cattle. Undoubtedly Melville Island at present would be a paradise for a small band of Eskimos but it would remain a paradise only a few years, when all the cattle would be killed off. It is clear that Eskimos in the days antedating the fur industry and the support of traders would not by choice have remained in Melville Island long. Coming perhaps from Victoria Island to the south, possibly from the east, they discovered Melville Island (to judge by the ruins) two or three hundred years ago. At first it must have been a desirable land to them but the desirability consisted entirely in the cattle. In a few years these were killed off, whereupon the colonists either died of starvation during an unlucky winter or returned to the more favorable islands from which they had come. It is of course possible that after a few decades had elapsed and the ovibos had had a chance to become more numerous, a second migration might have come in to remain for a few years.

We know that Melville Island has been seen by the Victoria Island Eskimos when they hunt on the north coast. No tradition survives there to tell of their ever having crossed over to Melville Island, but with its cliffs in plain sight there is no reason why a few adventurous families might not do so any time. They may easily do so in the near future, for in the course of our expedition one Victoria Island Eskimo accompanied us there and discovered for himself the abundance of the highly-valued polar cattle.

On June 29th we came upon the only caribou seen on this trip along the Melville Island coast. It was a yearling and therefore thin, so we made no serious attempt to get it. That day also we saw the first owl since the preceding 20th of February when we noticed one just north of Cape Kellett. We had noted in the fall of 1914 that the owls which were very numerous in the summer became gradually fewer towards Christmas and seeing one in February really surprised us. So far as we know, their main food is the lemming and these must be hard to get in winter time. Still, we occasionally see lemming tracks in any month of winter and it is doubtless these stragglers the owls live on.

Watching the owls in their lemming hunts I have marveled at their intelligence but equally at their stupidity. An instance is a short autumn day when I sat for several hours on a hill in southwest Banks Island and studied through my field glasses the white foxes and owls all about. Within a circle of a few miles were several foxes, now hidden by hills or in ravines, now visible in the open, hunting lemmings. On knolls here and there sat owls watching the foxes.

There had been a four or six-inch fall of snow which lay as yet untouched by wind, level and fluffy. Under this snow, tunneling it and fondly believing themselves unobserved, the lemmings were everywhere. The foxes moved about at a leisurely, elastic trot. Every few minutes I could see one of them stop, cock his head on one side, and listen. Possibly the senses of sight and smell were also active, but certainly they gave primarily the impression of listening. After a moment or two of alert attention the fox gave a high leap in the air like a diver from a springboard and came down in the snow with nose and forepaws together. In half the cases the lemming was caught at that instant, in half the remainder he was caught a moment later, but in a few instances he escaped—probably into a hole in the frozen ground. If left undisturbed, the fox would kill the lemming with a sharp nip or two, drop it on the snow, look at it contemplatively for a moment, pick it up again and bury it in the soft snow to trot off and—I have no doubt—forget all about it. For days and days the lemming catch would be far in excess of appetite, and before the fox became hungry a hundred miles might intervene. If these buried lemmings are ever found and eaten it is probably by a wolf or some other fox.

But the fox rarely buried the lemming undisturbed. From a nearby knoll an owl was watching with eyes and interest as keen as mine. When the fox paused, alert for a sound beneath the snow, an owl on a nearby hill half-turned and part-crouched for flight; while yet the fox was on its springboard leap and dive through the air the owl's broad wings were spreading; and before the fox had buried its kill the owl was upon him. This must have been the thousand and first experience of the sort for the fox but it acted as if completely surprised. No doubt its attention had been so focussed on the business of securing the lemming that owls were temporarily forgotten. At the wing swish and approaching shadow the fox cringed as if in abject fear, but nevertheless evidently half realized that the object of the owl was robbery rather than murder, for with the very cringing and slinking motion of fear and flight the fox picked up the lemming (if it had been dropped). Then came a dash away, fast for a fox but slow as compared with the easy glide of the owl, at the end of a short second of which the owl was directly over the fox, reaching for it with its talons but never touching, for evidently discretion was part of its campaign. After two or three sharp doublings and vain attempts to get away from the owl the fox would turn on his pursuer and make a great leap in the air towards her. Apparently the owl's object was to make the fox snap at her, thus in excitement dropping the lemming from its mouth. In this I never saw the owl successful, for in every case watched by me the owl gave up worrying the fox after half an hour or so, but I was told by Eskimos that they had seen foxes drop their lemmings in snapping at the owls, whereupon the owl snatched the lemming from the snow and was up and away. Such outcomes now and then must account for the cheerful optimism with which the owls keep up their watching and worrying of the foxes.

But this ingenuity of the owl is more than matched by her stupidity. Why doesn't she wait till the fox buries the lemming under four or five inches of fluffy snow and trots off? With a scratch or two of her claws in the snow the owl could now have the lemming. Just that much increase of intelligence would certainly make the owl's struggle for existence during the northern winter far simpler. As it is, it must be a severe struggle, which accounts for most of them going south during midwinter, if not before. It is only rare owls, like rare ravens, that spend the whole winter far north of the treeline.

At the end of June on the middle of the west coast we found the season a great deal more backward than it had been in Banks Island just after our landing the year before. When we had landed at Norway Island on June 25th most of the land was free of snow with here and there a drift persisting in the lee of some hill. Now in Melville Island at the same season the spots of bare ground were scarcely bigger than the spots of snow on Banks Island. Still, the weather was so warm the last week of June that it was unpleasant for walking or any exercise, although we felt it about right for sitting around in idleness at camp time. It is probable that a week after we left Melville Island most of the snow was gone.

On my second expedition I spent the year 1910-1911 northeast of Bear Lake where cattle were still not extinct. At that time we always knew in what direction to go to get them but we had not the sportsman's desire for a trophy and they were not of any great scientific interest, for their pelts are more numerous in museum collections than those of many northern animals. I had also a sentimental disinclination against being a party to the killing of the last survivors in our district. Accordingly, while I saw the traces of cattle and knew Indians who killed them that winter, and while a week's journey would easily have brought us into a country where we could have killed dozens if not hundreds, I had not up to the present killed polar cattle or even looked for them.

We saw the first of them June 30th although their traces had been evident since we came near the coast. Their footprints were in the mud and great tags of their brown wool lying here and there on the snow or in the grass. I quote my diary:

"*June 30, Wednesday:* Started (to hunt ahead) 10:30 P. M. and the sleds followed about 11 P. M. (June 29th). Camped about 6 A. M. (June 30th) on the north shore of Marie Bay. Distance traveled about six miles. At about 1:30 A. M. I went to the top of a 400-foot hill half a mile inland to have a look at the bay, as the going was execrable—slush two to four inches above the bottoms of the sled basket in many places. Saw from this hill two polar cattle. I have never wanted to lend a hand in the extermination of these patriarchal remnants of a race, but we had only one meal of seal meat for the dogs, two meals for ourselves . . . besides blubber and other fat. I therefore had to shoot these poor fellows. They proved old bulls. We camped on the shore of the bay abreast of the hill and fetched the meat in two loads, sledding over bare ground half the way. Seals are difficult to get now, as one does not like to crawl snake-fashion through eight or ten inches of ice water."

In a way it was lucky that these were very old bulls for otherwise I might have disbelieved entirely the story that they have an odor or a taste reminding one of the perfume of musk. I remember quite well my mother's silver box of musk she inherited from her grandmother, with the odor still there after more than threescore years. This archaic perfume was therefore known to me, but I did not notice any musk odor about the animals when skinning them. Ole had shed most of his civilized tastes so far as meat was concerned, but he still retained a fondness for kidneys that Thomsen shared. These two saved the kidneys which we might otherwise have fed to the dogs, and boiled them with our first potful of meat. In the cooking we noticed an odor resembling musk, enough to be identified when coming from an animal named "musk-ox." The meat itself had a slight pungent flavor, although we agreed it was not a disagreeable flavor. But Thomsen and Ole reported that the kidneys were remarkably strong; I think they threw pieces of them away. I did not realize it at the time but later from repeated cookings of their beef where kidneys were never put in the pot, I feel certain that the odor and taste in this one instance must have come from the kidneys.

In later years when we had to eat a good deal of ovibos beef, some Eskimo women in our parties claimed to be able to smell a peculiar odor about it but it was usually not noticeable to the Eskimo men nor, so far as I know, to any of the whites.

From this time on as we proceeded south along the coast we saw between twenty and thirty cattle, although we never took pains to look for them. On one occasion we took several photographs of two young bulls and a cow. They were about half a mile from camp and Thomsen and Ole went up within fifty yards of them to have a good look. The animals stopped feeding and kept their eyes continually on the two men as long as they were near but resumed their feeding when they left. Upon the report of the tameness of these three, Storkerson took a camera, went within about fifty yards and took about three pictures, later spoilt by water getting into the camera. Storkerson had used a "vest pocket" camera, and on his report of how near he had been I took a larger camera to try to get some better pictures. But our attentions were beginning to seem suspicious, for when I got within three hundred yards the animals became restless and when I was more than two hundred yards away they ran off. They ran for about a quarter of a mile and stopped on top of a knoll, and when I continued to follow they ran a second time, and the third time they kept running till they were out of sight.

Thus we got an initial lesson in the psychology of ovibos. Their minds seem to work remarkably slowly and it takes a long time to make them run. They make a defensive formation when any startling object appears to them. Farther their thinking does not seem to go until after five or ten minutes. Anybody who goes under cover to within two hundred yards and then runs up at top speed can get within any distance of a herd unless that particular herd is nervous from having been previously followed around and frightened. But if after running up you remain near them for five or ten minutes, there is about an even chance of one of two things happening: either they will scatter and begin to feed or they will stampede. At this time the ovibos were shedding their wool so profusely that upon side view their legs could not easily be seen and in some cases could not be seen at all for the wool that hung down to the ground and dragged along.

Marie Bay, which the chart shows as less than five miles deep, appeared in the crossing to be fifteen or twenty miles deep. It seemed to have a fjord-like character and for five or six miles inland a uniform width of three or four miles, and beyond that to continue for at least another ten miles. This discrepancy seemed curious to us at the time but it is not remarkable when we compare it with McClintock's record of his survey of this coast. Both his diary and his route show that he traveled about tangent to Cape De Bray and Sandy Point, a course that took him far outside the mouth of the fjord which itself extends out from a shallow bay. This shows how Melville Island could be profitably resurveyed, although it is better mapped than any other of the northern islands with which we had experience. The fact that it is comparatively well surveyed and that we have always been in a great hurry when passing it has prevented us from any serious attempt to modify its coastline.

In comparing the recent Admiralty charts with McClintock's original survey as published in the Admiralty Blue Books I have noted several differences, and in practically every case I have found that McClintock's original work corresponded with our observations better than the alterations as published by the Admiralty. For instance, McClintock shows the trend of the coast from Cape De Bray towards Sandy Point to be more easterly than indicated on the Admiralty chart. Our observation is that it is even more easterly than shown by McClintock. In most cases of difference between McClintock's original maps of Melville Island and the more recent ones it is strange that any change has been made, for most of that coast has been untraversed by any one since his time.

## CHAPTER XXXV

### MELVILLE ISLAND AND McCLURE STRAIT

TOWARDS the end of June we began to be annoyed and delayed by the rotting of our dog harness. I suppose there must be some rot-proof material or rot-resisting enough to last through a season, but we had none of it on the expedition. The best thing we ever tried is ordinary commercial horse harness leather. We never had much of this and relied on two things: first, the moosehide harness made by the North American Indians, practically indestructible when kept dry. Through experience I know that a set of this will last for years under ordinary winter conditions. But these were no winter conditions, for our progress was much of the time something between wading and navigation. It was not possible to travel over the land for, although there was snow in many places, there were little rivers coming down to the coast too deep and turbulent to be forded. It was not possible to leave the coast on approach to these rivers so as to make a detour around the mouth, because their warm water had made its way between the ice and the land to a considerable distance each way from it, forming an impassable moat that prevented us from getting out on the ice. In fact, it was only at points half-way between these rivers that it was possible to get from sea ice to shore, and we had to travel along a mile or two from land. The ice in Fitzwilliam Strait and later on in Kellett Strait was mostly of the type known as "paleocrystic"; that is, it was old ice where the rains and thaws of one or more summers had rounded the pressure ridges into oval hummocks. There was a little this-year's ice here and there, showing that the straits had been open or at least that the pack had been in motion the previous season.

On the old ice there were left over from last year water courses which had deepened into channels, in some cases four or five feet deep. Where they were that deep we did not venture into them but the best we could usually do was to cross where they widened out into little lakes, the depth of water then being from a few inches to three feet. In the deeper places the dogs had to swim and the men had to keep their hands on the sledges to keep them from upsetting as they floated along behind the teams, buoyed up by empty tin cans kept near the bottoms of the loads for the purpose.

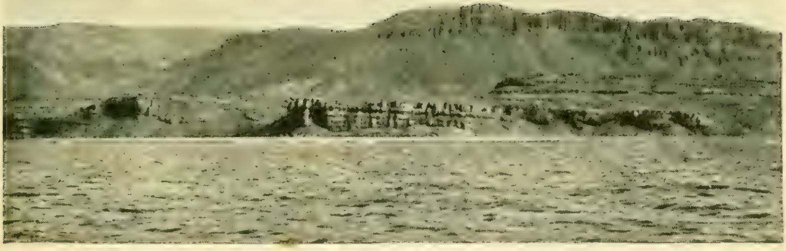
But the worst thing was the effect upon harness that had now been wet for weeks. We always made an attempt to dry them but our stops were never long enough to provide a fair chance except when we were delayed by rain or snow, and then there was no question of drying. The harness, whether made of cotton webbing or of Indian smoke-tanned moosehide, would stand about two or three weeks of this, after which they became so rotten that they broke whenever the dogs made a particularly heavy pull. That meant that they broke at the most critical times.

By the 3rd or 4th of July the harness had become so bad as to be almost unusable and we had to devote a day to making new harness out of the raw hides of recently killed seals. These would soon rot under the same conditions and they were exposed to the further danger of being eaten by the dogs, for there are few things more appetizing to a dog than fresh sealskin. In this we practically agree, for if you have time to scald the hair off seals, as is done in butchering pigs, the skin becomes an excellent dish resembling pigs' feet.

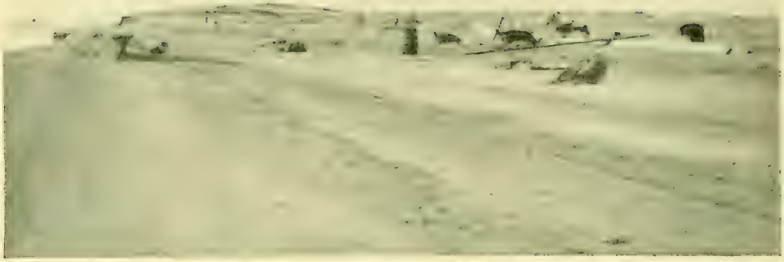
Another trouble was that the thaw had now been in progress long enough to convert most of the ice into what is known as "needle ice." Salt water ice so long as it remains salt does not divide into crystals on thawing, but fresh water ice or sea ice that has become fresh settles into crystals resembling hexagon or octagon lead pencils on end and with upward pointed tips sharper than the sharpest leads. Over these men and dogs alike have to walk, but we have the advantage of our feet being protected by boots soled with the hide of the bearded seal, so that one pair of boot soles will stand perhaps a hundred miles of walking over even this sort of ice, although boots shod with the skin of the common seal would not last more than one-fifth that distance. We protect the soles by using patches under the heel and the ball, expecting each patch to last a day or two. In this way we can make two or three pairs of boots do us a season.

But the poor dogs have none but the natural protection of their feet at first. Four or five days of travel over needle ice will make the soles of their feet raw, and the time would soon come when they could not travel at all if we did not make boots for them.

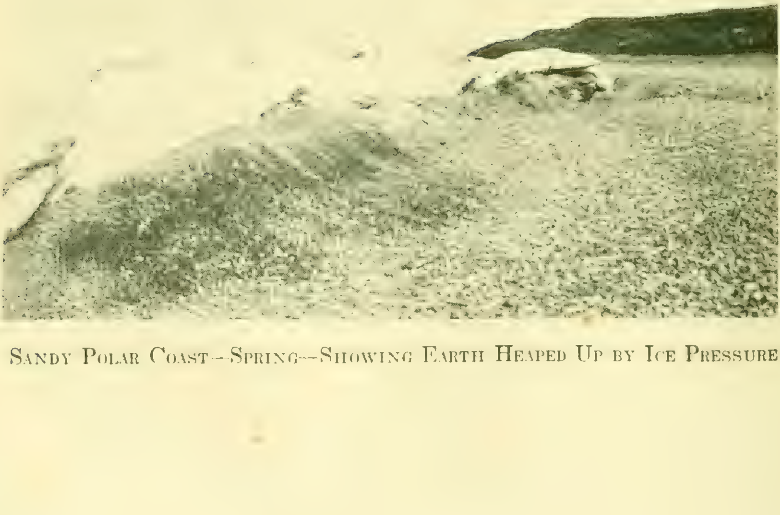
Lead Running Away from Land Showing Loose Ice Cake that Would Serve as Bridge or Ferry.



Rocky Polar Coast—Summer.



Sandy Polar Coast—Summer.



Sandy Polar Coast—Spring—Showing Earth Heaped Up by Ice Pressure.

It had been my intention at the beginning of this trip to bring along four or five hundred boots but some one had blundered and when we made a search of our loads we found less than two hundred. These were made of canvas and each would be good for one day. The boot is made without much shape to it, something like a mitten without a thumb. When a hole has been worn on one side we turn it around so that the dog walks on one side of the boot in the forenoon and on the other in the afternoon. It is a well-known fact that thirteen dogs have fifty-two feet, but I don't think any one realizes it fully who has not had the task of making boots for dogs day after day. It took only four days to wear out the ones we had with us. We were in a great hurry to get to Banks Island, so at first we used to sit up evenings to mend these boots, making a few additional new ones. But it soon became apparent that this was not practicable and for the last week or ten days we used to travel two days and then stop one day for making boots. It helped a little to make some of these of sealskin or of caribou skin so that they lasted a little longer, but here again there was the disadvantage that we had to watch the dogs to see that none of them ate their boots when we stopped. This was not because they were hungry but merely because their appetites were normal.

When we got towards the southwest corner of Melville Island our fat for food and fuel had run out, for the two old bulls were extremely lean. At this season it is not possible to get at a seal without crawling snake-fashion through much ice water. The discomfort is not the worst feature, for it is almost impossible to keep from making a splash now and then, and a splash will always put a seal on his guard. Some of the ice we have to crawl over has been undermined by little rivulets of water and even with the best of care we break through. I therefore had to try several seals before getting one. The sharp needle ice that I have described as so hard on the feet of the dogs was no less hard on my old clothes as I dragged myself forward, and they were almost as nearly worn out as I was chilled numb when finally I got within about 150 yards of the seal. I had been trying so long and the glare of the sun was so bright that I knew shooting for the head was hopeless and I tried a body shot. Luckily it not only went through near the heart but also broke the spine. However, I got the seal by the barest margin for after running as hard as I could he was just sliding into his hole when I got there. That is the trouble with a body shot—the seal is lying on an incline, and the blood from the wound gets under him (as previously explained) and acts like a lubricant, tending to make him slide forward into the water.

On July 3rd we saw a thing unique in the experience of all of us —a seal that had been killed by a wolf. We saw the wolf eating something on the ice about half a mile from our course and I went over to see what it was. With usual intelligence, this wolf made off while I was more than a quarter of a mile away. From the position of the seal's body and from the marks on the ice the wolf had caught him sleeping near his hole and had dragged him about fifteen yards. He had then killed him by biting him repeatedly in the throat, whereupon he had commenced eating. I have heard trappers on the mainland say that seal's blubber is poor bait for wolves and that they will not eat it. Possibly this is another of the common superstitions, for all this wolf had eaten was blubber. He had commenced on the back of the seal a little forward from the tail and had eaten about a square foot, perhaps six or eight pounds, of the fat but none of the lean except for the skin that was attached to the blubber.

This recalls the food habits of the polar bears. Apparently they do not keep in close touch with the trend of modern dietetics, for they do not seem aware of the necessity for variety in their food. Or it is possible that they are overimpressed with the views of certain dietitians and are afraid of an excess of protein. However that may be, they seem to confine themselves to fat when they can. I have seen the evidence of a polar bear eating nearly a whole seal—meat, bones, blubber and all—but these have been small seals and the bear must have been hungry. The ordinary thing, so far as my experience goes, is that if a bear kills a good-sized seal he goes about it just like our wolf, only a good deal more rapidly, and he strips the entire carcass, or nearly the whole of it, of fat and then goes off, leaving the meat and blood for the foxes.

This practice of bears has led to the belief among Eskimos that a bear has the ability to strip the blubber off a seal along with the skin in the manner in which an Eskimo skins a fox. It is an operation for which English has no good descriptive term unless we borrow it from the furriers, who call it "to case" a skin. It is as if you were to remove a stocking by turning the upper part back on itself without first pushing it down towards the ankle, and then pulling it off in such a way that the stocking is turned entirely inside out.

Those who are familiar with the well-known "fact" (and who of us is not?) that more fat is needed in the diet where the weather is cold, will doubtless explain in that way this peculiar food habit of the polar bear. Here naturally arises a subject on which I want to have my say—the great need for fat in an arctic diet.

I am not sure whether I learned this from my parents or from the school geographies. At any rate, I knew it up to the time I was twenty-seven when I first went north to the Eskimos. I had read much about their fondness for blubber and I expected to marvel at seeing them eating with a spoon some palatable food such as butter, or to be horrified at seeing them drinking train oil. I did see them eat butter with a spoon. They seemed to look upon a piece of it as a sort of dessert as we do upon suet pudding. We never eat butter with a spoon unless after mixing it with sugar and changing the name into "hard sauce." But in my whole polar experience I have only on two occasions seen an Eskimo drink seal oil. One was the time we were starving on Horton River in 1909 and had nothing but seal oil for food. There were seven or eight of us and the rest used to soak the oil up in something to make a kind of salad, but one old man used to take his oil "straight." He used to drink half a teacupful in the morning and half a teacupful at night, and the rest of the Eskimos marveled how he could do it.

The only other place known to me where seal oil is drunk is on the "Sandspit" at Nome, Alaska, when the tourists come to town. It is an ordinary tourist stunt to walk out to the Sandspit and say to the first Eskimo, "Here, Johnny, I'll give you a dollar if you'll let me see you drink some oil." The victim I saw took a small sip and tried hard not to make a face and my tourist friends thought they had seen one of the wonders of the North.

My experience with diet in the North is that you get hungry sooner if you are cold but it makes little difference just what food you eat to satisfy the hunger. On ships and at whaling stations or at the barracks of the Royal Northwest Mounted Police at Herschel Island there is no greater percentage of fat in the diet than where similar groups are gathered in another climate. If men are badly dressed or if their houses are cold they may eat with rather better appetites than would be the case farther south, but what they eat is a matter of choice or individual preference. The Police eat a great deal of bacon and so do the Hudson's Bay men, but that is largely because it is considered a standard ration and is regularly furnished from outside.

There was a time when fat was a much more important element than it is now in the diet of Europeans. This was before the time of sugar. Four hundred years ago ordinary sugar was unknown in

Europe and the amount eaten in the form of honey or sweet fruits was negligible when compared with the present-day huge consumption. Three hundred years ago sugar was the luxury of kings and two hundred years ago it was a rarity in the diet of the ordinary man. Even within our own time the per capita consumption of sugar has increased enormously. And this article of food which some people imagine to be a prime necessity and which others even think to be essential to health, is really a newcomer in the diet even with us. But as sugar has increased in favor, fat has lost caste. The relation between the two has always been reciprocal—the more sugar the less fat.

If it were true that there is special need for fat in the diet of the northern people it ought to follow that there is less need for it in the tropics, and this is the common view. But it is well known in Australia that in the early days before commerce attained great proportions and before sugar and jams and the like became an important item in the diet, the "boundary riders" or sheep herders in sub-tropical Australia used to select for killing the fattest sheep. They would eat the fattest meat and if too much fat tried out they would eat the melted grease or the tallow. But as commerce increased and sugar began to come in they ate less and less of the fat mutton until now you will see a sheep herder in the same climate trim off the fat from his meat and leave it on the plate.

My friend Carl Akeley hunts in tropical Africa. There is very little sugar in the regular diet of the negroes he employs as carriers and attendants. He has seen at the killing of a hippopotamus (although I have never seen it at the killing of a seal or a whale) the whole assembled crowd of natives go wild with joy in an orgy of fat-eating. When the hippopotamus is killed they cut off the fat in quivering strips and eat it until they are ill. So it may be necessary to seek another explanation than the standard one of the need for fat in cold climates to explain the polar bear's peculiar habit of stripping the fat off a seal, somewhat as a small boy licks the jam and butter off a slice of bread.

At the southwest corner of Melville Island we saw the first polar bear track since our landing at the southwest corner of Prince Patrick Island. As I have remarked elsewhere, polar bears are very rare animals north of 75° N. latitude in the western part of the Canadian arctic, although they seem to be numerous enough in similar latitudes farther east. Just before seeing the bear tracks we had found a rookery of some large gulls, probably Barrow gulls, and I tried to get some eggs, but they were too high up in a cliff.

We were struggling steadily southward and I began to fear that we would not get to Cape Kellett much ahead of the whaling ships, if any were to come this season. By something like an inspiration I made the guess in my diary that the first whaler would probably arrive on the 10th of August. To make ready for this possibility I began writing letters on the back pages of the diary, for I did not see how we could possibly get to Kellett much before the 10th of August and I wanted to have some mail ready. I also began my report to the Government, writing in the evenings while the men were cooking and sometimes when they were making dog boots.

We expected to make a crossing to the west side of Mercy Bay, Banks Island, from Cape Russell, but the cliffs are precipitous at this point and there is deep water inshore, so that a shore lead prevented a landing until we had gone five miles east beyond the Cape. Here we stopped for a day to repair harness, make dog boots and prepare for the crossing, and incidentally we clambered about the cliffs and found different layers of fossiliferous rock, useful in arriving at the geologic age of the strata in the vicinity.

Food animals might well be scarce on the way across Melville Strait. But the ice was sure to be rough, and for the safety of our sleds and to prevent the harness from breaking too often we wanted to be as light as possible. Accordingly we started on July 8th, for what we expected would be a four days' crossing, with food not quite enough for the four days.

That day and the next we saw neither seals nor bears. The ice was very badly cut up and sometimes the dogs had to swim. I quote two diary entries: "*Sunday, July 11th:*

"Started 7:50 A. M., camped on account of heavy rain at 2:15 P. M. Distance 12 miles.

" 'It never rains but it pours' is true in more senses than one of our situation this evening—short rations and heavy rain on an ice field are a disagreeable combination.

"Saw a bear track—fresh.

"*Monday, July 12th*—A thick fog with variable light airs made travel impossible until the afternoon. We were ready to start before six in the morning but were delayed by the fog till 2:30 P. M. Camped about 12:15 A. M. July 13th, distance 14 miles.

"We saw a seal at 6:30 and I shot him stone dead at about 100 yards. I foolishly delayed to shoot a second time 'to make sure of him.' I then ran as fast as I could but the blood from the wound thawed the ice too fast and he slid in when I was ten yards off. Camped on seeing two more seals but before I got near them the dogs started barking at something, which scared them and they disappeared."

July 13th we were still six or eight miles from land when we stopped to eat the last of our food. It is a bit exaggerated to say, as the diary did above, that we were on short rations. Rather we were eating things that were not particularly agreeable. Our last lunch was a piece of sealskin with a little blubber attached. We enjoyed it, although we could think of things we might have preferred.

After about eight hours of wading through water and scrambling across wet ice hummocks we finally camped within two hundred yards of the shore, separated from the land by a shore lead of that width. This lead was full of seals. We expected them to sink, for the water was so fresh that you could almost drink it because of the river water that was coming off the land. But we were hungry and, after all, the laws of nature might not work, so I shot about a dozen seals before I made up my mind that the laws really were working. By that time the men had converted the sledge into a boat and Thomsen and I paddled ashore while Storkerson went in pursuit of other seals basking on the ice to the west.

Thomsen and I went in different directions, and shortly after landing he killed a hare. He saw then two caribou, whereupon he set off in pursuit of me and at his signs I turned back, although I had myself seen three old bulls in a different direction. Thomsen's caribou were young and lean but the lunch of sealskin made me incline to the view that a bird in the hand was worth two in the bush, so I went after and shot them. While Thomsen was doing the skinning I went in search of the bulls but they were not seen again. When we returned to the coast laden with caribou meat we found that "It never rains but it pours" was as much in order as it had been two days earlier although in a different sense, for Storkerson had killed a big seal.

It speaks well for the arctic lands that our landing this year should have been as propitious as last. In 1914 we had landed with half a meal of food and I had secured six caribou before sleeping. This time we landed with no food at all and had two caribou, a hare and a seal within six hours.

# CHAPTER XXXVI

## HISTORIC MERCY BAY

THE landing was made on the east side of Mercy Bay because that way the route was shorter. According to the maps Mercy Bay ought to be only some ten or fifteen degrees west of south from Cape Russell, and we had made a course so as to land on the west side when we should have taken a course twenty or thirty degrees west of south. Cape Russell is either placed too far west on the maps or Mercy Bay too far east. We later came to the conclusion that the trouble is with Mercy Bay. July 15th we crossed the bay and landed and camped about a mile from the monument erected in 1853 by McClure. We intended to land exactly at the monument but were prevented by very bad conditions of mud and water.

Mercy Bay is one of the historic places of the North. It was discovered by McClure in the *Investigator* the fall of 1851. The previous winter had been spent in Prince of Wales Straits near the Princess Royal Islands. After a vain attempt in the spring to get north through the straits into Melville Sound the *Investigator* had proceeded south around Nelson Head, up the west coast of Banks Island and east along the north coast. It was especially on the north coast that she got in close touch with the ice, being repeatedly in extreme danger between the heavy pack and the precipitous cliffs. These dangers had so impressed themselves on the ship's company that when they came to a bay to which they could escape from the open coast, they named it "the Bay of God's Mercy." It was free of ice then and promised well as a winter harbor, but the following summer the ice never left it and they were compelled to spend a second winter. The amount of game secured was only enough to give a little variety to the diet, the crew had already been for a considerable time on short rations, and plans had been made for a retreat by most of them to the mainland. This retreat would almost certainly have ended like the Franklin retreat farther south, indeed with greater cause. But just in time a message came from Melville Island saying that Kellett and McClintock were wintering at Bridport Inlet. This was not an accident but resulted from the fact that the previous spring McClure had sent a message to Melville Island to be deposited at Parry's Rock, Winter Harbor, telling the location of his ship, and Kellett's party had found it.

After consultation the *Investigator* was abandoned, most of her stores and gear being previously placed in a depot on shore. The crew marched safely over the ice and reached England as passengers on other ships. McClure was thus not only the first to discover the Northwest Passage (October, 1850) but the first to make it in the sense that he and his men traversed the entire distance although their ship did not. These were the first men to make a complete circuit of the western hemisphere, for they had come west across the Atlantic, past the south end of South America, north through the Pacific and then east through the devious channels between the islands, and thus home.

When McClure was in Banks Island he came in no contact with Eskimos and it seems improbable that they knew while he was there of his wintering in Mercy Bay. The spring of 1911 I had from some old men in Prince Albert Sound, Victoria Island, an account of how the Eskimos discovered the abandoned ship and the depot probably two or three years after McClure left them. The food, clothing and the like were of no value to the Eskimos, but there were two classes of articles that were to them beyond price—the iron and other metal work, and the soft wood.

Familiar as I was with Eskimo customs, I was surprised when my informants made this distinction between the soft and the hard wood. They explained that the hard wood was almost as difficult to make anything out of as caribou antlers and not nearly so durable. In other words, they saw no use for hard wood except to replace bone or horn, and bone or horn was better than hard wood. But the soft wood was a superior variety of the driftwood which they were familiar with and very useful. What they did was to take barrels, no matter what they contained, and break them up with the object of using the hoops. The staves being of hard wood were no more valuable than the food or rum contained in the barrels. Similarly, boxes containing clothing were opened, the clothes thrown away and the boxes made up into arrow shafts and the like.

When the Eskimos discovered the *Investigator* the news soon spread east and south and Mercy Bay for a long time became a Mecca to the Eskimos. But eventually, between the rusting of the iron and the pillaging of the Eskimos, the depot was completely rifled. Before this time the *Investigator* had sunk or else drifted away, my informants did not know which. One year she had still been on the beach and the next she was gone without a trace. A man whom I judged to be under thirty had been a boy of eight or ten when the last party had thought it worth their while to go to Mercy Bay.*

In view of the fact that Mercy Bay had for two winters been the headquarters of a great polar expedition we were surprised to find comparatively little correspondence between the map and the land. The bay is not unlike itself on the chart, but there are islands in it that are not indicated on the map, while the conspicuous sandspit that is indicated at Providence Point does not now exist. But the remarkable thing was that just west of Mercy Bay where the map indicated a nearly straight coastline there is another bay almost as conspicuous. The land on both sides is high, almost mountainous, the bay is three or four miles wide and eight or ten miles deep. In it is the mouth of far the largest river in Banks Island; a river which, as we later learned, drains as large a part of it as any two or three other rivers put together.

Thinking that McClure's winter quarters had been correctly located, partly because we knew that one of the men on his staff bore the title of astronomer, we were particular to get good observations at the place. We did secure fair ones despite unfavorable weather.

It was here one of our two chronometers failed us. At first we did not know which it was. That is the trouble with having only two and is the reason why one should carry three or more, for then the one that differs from the other two is recognized to be at fault. In our case the one given me by O'Neill was supposed to be losing fourteen seconds and the new one should have been gaining eight seconds, making a difference of twenty-two seconds per day, with the new one gaining. We compared them daily and had found their rate reasonably constant so far, but at Mercy Bay the new chronometer began to gain less and less and finally actually lost. It was a good many days later, however, before it stopped altogether.

While we were waiting for observations we took the boat tarpaulin, now about worn out, and cut it up to make pack bags for the dogs. One team was composed of big dogs which, because of great strength and long legs, were able to carry from twenty to forty pounds a distance of ten miles per day; for short distances the strongest could carry fifty or sixty pounds. But the other team vere small, about the ordinary Eskimo size. They were consequently weak, so that they could not carry more than from fifteen to thirty pounds, and so short-legged that they dragged in the water whatever they carried. We accordingly made a sled for these dogs to pull, out of the front halves of our pair of skis.

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* See "My Life With the Eskimo," Chapters XVII and XVIII.

The five days we were in camp at Mercy Bay we supposed that McClure's ship and depot had been near his monument and it surprised us to find no remains there beyond half an armful of broken barrel staves and the bent and rusted bottom of one small tin can. On July 20th, our observations and preparations finished, we started south, and discovered that the depot must have been about a mile south of the monument. Here was an oval pile of coal, perhaps six or eight tons. At first sight it looked very much like a mound of dark earth, heavily overgrown with grass. Lying about were hundreds and perhaps thousands of barrel staves, broken or whole. A few of these had been split but bore no other sign of having been worked up. Neither did we find any indication of Eskimo work on any other piece of hard wood. There were endless quantities of adze chips and knife shavings, but all were from soft wood, thus confirming the story I had picked up in Prince Albert Sound of the Eskimos using the soft wood and disregarding the hard. These Eskimos had told me also that when they last visited Mercy Bay there were left only two or three pieces of iron so heavy that they did not know how to utilize them. This also was confirmed by our finding only two pieces of iron, one an ice anchor and the other a grappling hook, both too heavy for working by any method known to the Eskimos.

Of the tons of food carefully deposited by McClure and later thrown away by the Eskimos no sign remained except one brown heap, perhaps half a bushel. It was soft and had no odor, and I thought it might have been peas or flour, but Thomsen thought there was a slight resemblance to the odor of cheese from the interior of the heap. We found leather boots decayed until the leather broke like cardboard. But what interested me most was the degree of weathering of the oldest adze chips and shavings. This corresponded, it seemed to me, to the weathering of shavings found by us the previous year at the Eskimo campsites on the west coast of Banks Island, and meant that most of these campsites dated from the period just after the *Investigator* depot had been discovered, say 1855 to 1860. This confirmed the estimate previously made that few if any of the campsites we saw were over a hundred years old. This does not apply to the village site at Cape Kellett, which may easily be older by several centuries. All about the depot were scattered the campsites. Huge quantities of shavings showed the Eskimos' occupation while they were there and the bones of polar cattle indicated what they had lived on.

# CHAPTER XXXVII

## FIRST CROSSING OF BANKS ISLAND [1915]

FROM Mercy Bay we attempted to make a straight course for Kellett, but within seven or eight miles came to the river that enters the sea six miles west of the Bay and found it far too large for crossing. At first we did not realize the size of it, and descended into the valley and followed the winding course inland, expecting every moment to come to a fording place. When we did come to gravel rapids where the river spreads out to two or three times its ordinary width we went down to it with confidence and were astonished to find that even here it was over six feet deep right close to the land. This showed the folly of following the bank of the river, which was difficult and caused delay, so we climbed out of the valley, traveling south a mile or two away from it, and attempting to save time by cutting across the bends. As usual, I walked a few miles ahead of the others, hunting. This now served the additional purpose of guiding the men, for by observing me on the sky line they could tell in advance where the bends of the river were and how to make short cuts.

The second day out from Mercy Bay I killed three big bulls, which meant more than enough meat, but seal blubber had run out and we needed fat. With thirty or forty pounds of clear fat accumulated, cows or yearlings would now serve for a satisfactory diet.

It took us eight days and perhaps seventy-five miles of travel to get to a place where we could finally ford the river. Fortunately it led almost straight south and therefore not more than twenty or thirty degrees out of our road, and when it was just beginning to turn to the east we found a ford. The ford was about three feet deep with a width of eighty yards, and the current was so strong that it would have swept us away had we not carried heavy ballast on our shoulders. The unloaded dogs swam after us. We had to cross in three relays to get all our stuff over, and on the third crossing some of us were a little light. I think it was Storkerson who was nearly swept off his feet. When I felt myself in danger of floating off I turned back and picked up a stone weighing thirty or forty pounds and with this on my shoulder crossed safely.

Soon we began to see moulting white geese and these increased in number as we proceeded south. When no nests were found we concluded that they were mostly or entirely males. Now and then a bird was visible that we had not seen farther north. The first golden plovers appeared July 27th and the same day blackheaded terns. The smaller gray tern we had seen July 15th at Mercy Bay. Although these were the first of either species we saw, we found later that both go up to Melville Island.

On this overland journey Thomsen had to break himself of the salt habit and the tobacco habit. When we landed at Prince Patrick Island from the sea ice we had thrown away everything that we considered unnecessary—the primus stoves for which we no longer had kerosene, a few odds and ends and six pounds of salt. I do not know why we had taken so much in the first place, for Storkerson, Ole and I the previous year had found our meat tasted better after we quit using salt. Ole had been so convinced of this that during the winter he had used no salt at his trapping camp. I had reacquired the habit at the ship, for the cook seasoned the food in the ordinary way, and Storkerson had picked it up again at his own camp where his wife insisted on using salt. But we were ready to give it up and Thomsen was not, and as a special concession he had been allowed to bring along his own private salt can. He had now come to the bottom of it.

It has usually been my custom, and will always be so hereafter, to require tobacco users to stop its use either before leaving the home camp or at the time of starting.* But on this trip I had allowed the carrying of tobacco. About the middle of the trip Storkerson voluntarily quit so as to give Thomsen enough to take him through. But Thomsen's use of it had been a little rapid and about the time we left Melville Island his real tobacco was gone. Thereafter he chewed pieces of cloth in which it had been carried, and when that was done, small pieces of his own pipe and later the pipes of Storkerson and Ole. We were not much beyond Mercy Bay when even these had given out, and I had the interesting opportunity of watching a man who had to give up salt and tobacco at the same time.

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* "I have always selected men for my parties who used neither tobacco nor spirits. . . . Tobacco is . . . objectionable in polar work. It affects the wind endurance of a man, particularly in low temperature, adds an extra and entirely unnecessary article to the outfit, vitiates the atmosphere of tent or igloo, and when the supply gives out, renders the user a nuisance to himself and to those about him." "Secrets of Polar Travel," by Robert E. Peary, New York, 1917, pp. 74-77.

No Eskimo I ever saw was as fond of caribou marrow as Thomsen was. When we killed the three fat bulls just after leaving Mercy Bay he ate so much that he was ill and his digestion was out of order for two or three days. At least this was my interpretation of it but he maintained that the trouble was the lack of salt. It took us twenty days to cross the island at an average rate of about ten miles per day, and towards the last Thomsen said that he no longer had much hankering for salt but still wanted tobacco badly. When we finally arrived at the base his first thought was to have a smoke, but he took no pains to add salt to his first meal cooked by Levi. When I asked him he replied that the food seemed a little too salty as it was. He had always used salt heavily, and under ordinary circumstances would have added a good deal of salt to dishes similarly seasoned.

At other times I have had experience with men who have said that they found it harder to break the salt habit than the tobacco habit. In general the time of greatest hankering for salt is about two or three weeks after you have ceased to use it. If you continue longing for it six or eight weeks after, you will find on trial that this longing has been artificial (or "psychological") in the sense that the taste of salt will not prove pleasant. I have known no one to welcome the taste of salt after being six months without it. When a white man has been a year without salt it becomes almost as unpalatable to him as it is to the Eskimos or Indians who have never used it; with this difference, that the white man knows from experience he will come to like it again, but the native has the opinion that he never will.

In dealing with Eskimos we have found that those who work on ships or who for any reason are compelled to eat salted food, acquire the salt habit about as quickly as they do the habit of tobacco smoking or that of eating some such strange food as bread. Sugar we found in Victoria Island to be peculiarly distasteful to the natives, and even children of no more than four or five objected violently to the taste of candy, sugar, sweet preserves, canned fruit and the like. Eskimo infants too young for formed tastes naturally take to sugar quite as readily as infant children among white people.

As usual at this season we traveled at night. This had every advantage over day travel except that when we tried to get sextant observations, especially at noon, we frequently failed to do so through oversleeping. This emphasized the value of the alarm clock, an item of equipment that I have neglected to mention. There are few things we find more useful. We commonly camp at six or seven in the morning and take a time sight for longitude before going to sleep. We then set the alarm to ring at about 11:30, which gives ample time to dress, prepare the mercury artificial horizon, and get everything ready for the meridian transit. But now we had left our clock at Mercy Bay and unless we actually sat up to wait for the noon altitude we usually overslept and missed it.

The Eskimo camps we saw on the journey were of the usual type, some of the tent rings of stone and others of sod, and the bones scattered about of cattle, geese and caribou, the last named being rare. Evidently cattle and moulting geese had been the main sources of food. Stone caches in which meat had been protected from wolves were more numerous than the campsites and in everything there was evidence of tremendous slaughter of ovibos. Sometimes we came to places where fifteen or twenty skeletons lay within the space of one or two hundred square yards with only such bones missing as wolves might be expected to devour or carry off. This showed that entire herds had been slaughtered without any appreciable percentage of the meat being used. The character of the wood shavings indicated that parts from the interior fittings of the *Investigator* had been carried all over the island before being made into implements. We saw no campsites that did not have some evidence that the campers had been at Mercy Bay. It is, however, possible that some campsites may have been used several times and that it was merely the last users who had Mercy Bay products with them.

This was one of our delightful summer journeys. It was late enough in the season for most of the mosquitoes to be gone and it was only one or two evenings that they troubled us. We were too far east in Banks Island for the thick fogs that lie on the west coast whenever the wind blows off the western sea, although the clouds did come over and give us two or three rainy days. When the wind was from the east the temperature rose to about 80° in the shade some days. The caribou were fat and numerous, and although we continued to carry no more than two or three days' provisions we always found a fat bull before the dog packs were empty. The dogs carried most of the heavy things, the men part of the bedding, and towards the last the guns and field glasses only. Bedding is tolerably safe when the packs are heavily ballasted with meat or some such thing, in which case the bed skins can be tied in small bundles on top of the dogs' backs.

One illustration will show a peculiar danger inherent in this travel. I had been hunting ahead and was approaching some caribou that were about a mile off our course. Both these caribou and I were in plain sight and the men should have seen us, but they did not see us and went right by. This exposed them to a danger from which I protected them ordinarily, that of coming over a hill crest without warning into close quarters with caribou.

That is just what they did. Storkerson knew we needed meat that evening and instead of looking after the dogs he commenced blazing away at the caribou. He had fired two excited shots, both without hitting, when one of the other men shouted to him to catch the dogs. It was too late then. Out of the thirteen dogs Thomsen and Ole were able to get hold of only four or five and the rest rushed in full pursuit of the caribou. It happened that the packs of some of them were heavily ballasted with stone, the meat ballast being gone, and the smaller dogs were unable to run very fast. Some of the bigger ones, however, even with their thirty or forty pounds, were soon out of sight a mile or more away, following the herd. They happened to run in my direction and I was able to head them off. Only one dog escaped me.

This was the middle of the day and we should have been able to travel another four or five miles, but we had to camp and search for this dog. The greatest danger was that his pack might come off in such a way as to drag on the ground while still fast to his neck. Some dogs will bite themselves loose but this particular dog had never been known to do that, and I was afraid that if his pack came off he might be tethered by it until he starved to death. Luckily we found the pack, for he had been able to clear himself after he shed it. But it was hours afterwards when the dog himself came back.

As I tell it, this does not sound like a dangerous adventure. But I have heard of many cases where the consequences were serious. I know an Alaska Eskimo who with his wife and family was hunting about six days' journey inland, when all of his dogs ran off with their packs after a herd of caribou. The packs had been so light and so well strapped that the dogs were able to run fast and far. The Eskimo camped for two days hoping for the dogs to come back. He then retreated to the coast, living on berries and roots all the way, for the dogs had carried off all his ammunition. He and his family barely escaped with their lives. The dogs were never heard of again and doubtless starved to death.

There are dogs that know how to find their way home. But in the sense of a permanent dwelling place the Eskimo dog has no home, for the camp is always moving. It is rarely that a dog when once lost finds his way back. If he is recovered by the owner it is usually either through accident or because the dog finds another camp and is eventually returned by people who recognize him and are able to tell where he belongs.

A good story to illustrate this point can be cited from the Mikkelsen-Leffingwell Expedition of which I was a member. When they were starting out for their ice journey they camped three or four miles west of the winter base, and during the night one of their dogs ran away. They thought he had run home. It is impossible to say what the dog's own idea was; possibly he went in pursuit of a polar bear. He appears to have gone right past his own home and past many Eskimo camps for he was picked up a week or so later on the verge of starvation at a camp forty or fifty miles to the east. The arrival of this dog under those particular circumstances gave rise to a rumor that the whole ice exploring party had perished and that the dog had come in off the ocean ice, the sole survivor. This is not an exceptional but a typical story of what happens to dogs in the North that for one reason or another get separated from their human companions.

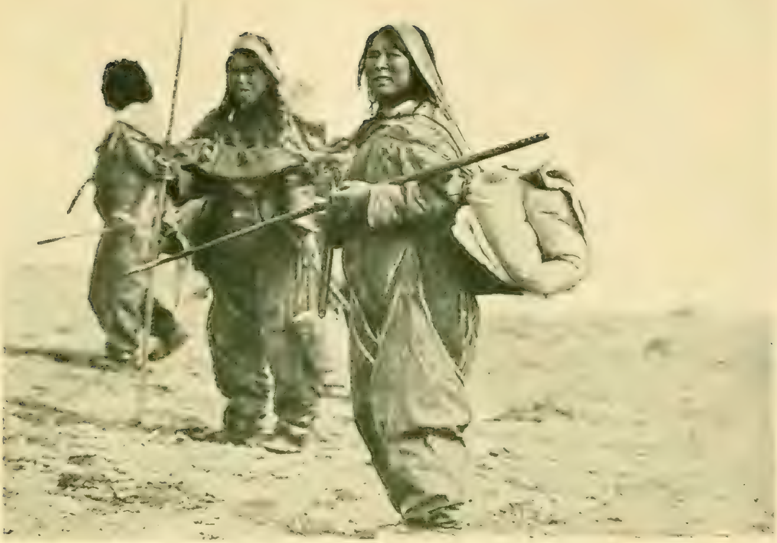
On this journey we had one more example of how easy it is to misjudge size when the thing judged is at an unknown distance. We had been seeing nothing but cows and other lean caribou for two or three days and were nearly out of food. If we saw no bull this day we would have to kill anything we could get. I had fallen behind a quarter of a mile instead of being about two miles ahead, and when the men came to the top of a hill I saw them drop down and start crawling towards me, the dogs following. This meant that they had come suddenly in sight of game on the other side. It must be a bull, otherwise they would not have taken such pains to conceal themselves. Sure enough, Storkerson and the others told me when I caught up that the biggest bull they had ever seen was right on the other side of the hill. When I went to the top of the hill the animal had probably moved off, for now it was about half a mile away. I looked at it through the glasses and saw it was a young calf. I had already told the men to make camp, so I went ahead and killed it. It was so small that one man could easily carry it on his shoulders.

The only sure way of judging caribou is by some physical peculiarity other than size. The age and sex can be told by the color, by the shape of the horns and by the manner of carrying the head even when still. But the best way is to tell by a combination of these characters and especially the walking or running gait. An Eskimo or other experienced hunter can tell the sex and age, and by inference the size, of an animal as far as he can see it if it is moving. But by mere apparent size no one can tell a big animal from a small one when there is nothing by which to judge distance.

August 7th, when we were thirty or forty miles northeast of the home base, I saw with the glasses a row of sod monuments of the kind used by Eskimos when driving caribou into an ambush. These might, of course, be old; but they looked very black and so we turned out of our course to investigate. Much to our surprise we came in sight of an inhabited Eskimo camp of the type so familiar to me from Coronation Gulf—stones set on edge for the drying of meat, and a small caribou skin tent with the hair side out.

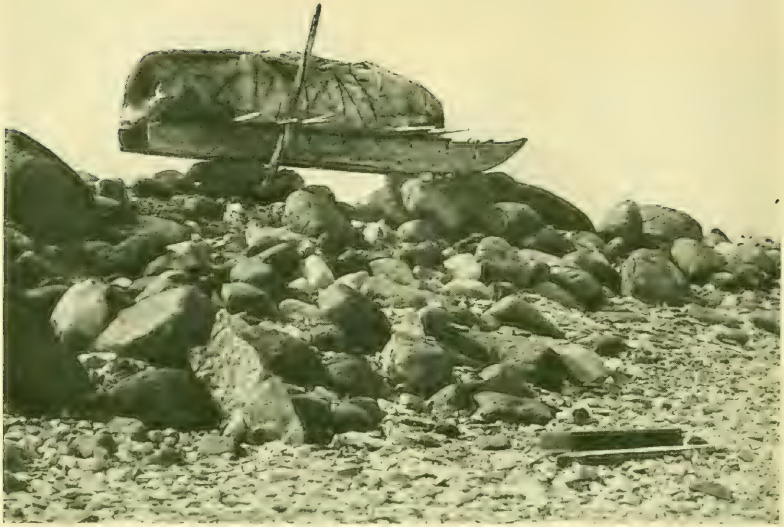
The family belonged to the Minto Inlet group. It was a man named Kullak, with his wife Neriyok, their daughter Titalik of about ten years (as we could tell by the fact that her face had just been tattooed) and the boy Herona, perhaps six years old. They told us that in the spring they had been encamped on the ice in Prince of Wales Straits when Wilkins, Crawford and Natkusiak passed that way, going towards Coronation Gulf. This gave welcome news that Wilkins had made good progress that far and the reasonable assurance that he had reached our mainland base before the breakup of the ice. Wilkins had given them information as to the location of our Cape Kellett base, and three families had come over to visit us for trading purposes and to spend the summer living on moulting geese.

They inquired eagerly whether we had seen any cattle and when we said that we had not, either this year or the year before, they gave it as their opinion that all of them had now moved away from Banks Island. That is always the way with the Eskimos and the northern Indians. They can never conceive of any animals being exterminated, and when none are any longer found in any district the explanation given is that they have moved away, usually because some taboo has been broken which has given great offense to the animals and has induced them to abandon the locality. Kullak said that three or four years before when he had been on southeastern Banks Island polar bear hunting, some cattle had come down to the coast and had been killed, and he had heard of other people killing them in that vicinity since. This spring, however,

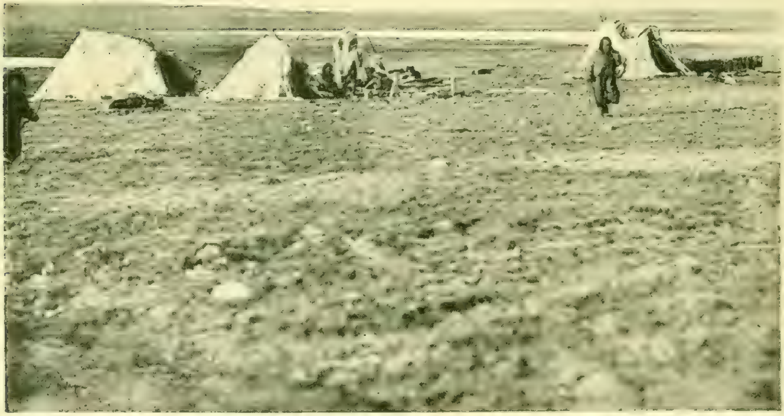


The Women Carry Anything Fragile Wrapped up in Clothing.

Summer Travel with Pack Dogs. Copper Eskimos.



A Summer Cache, Copper Eskimos



A Summer Camp on the Prairie, Copper Eskimos.

he had come through that very district without seeing any signs, which had disappointed him greatly.

The other two families of Kullak's party were a little farther north but they all intended to visit us at Kellett later in the year. They told me great stories of the wonders they had seen at Kellett and of the kindness and hospitality of our people, but they also marveled at their lack of intelligence in certain lines. They told as an extraordinary thing that our people used to go long distances from camp with guns to get a few geese. They had, they said, volunteered to show them how to get geese and had gone a short distance and driven a flock of moulting geese down to the camp where they had been killed. Captain Bernard later told us that they had gone about five miles and driven about five hundred geese like a flock of sheep right down to the house.

Kullak gave it as his opinion that our people had been living on very inferior food and had been almost starving until he and his party showed them how to get geese. Having found the party without meat he could not conceive that the other food which they were eating instead was anything but an emergency ration. His own people never eat roots or berries in any quantity unless they are starving and seldom even taste them, and his inference was, therefore, eminently natural.

As we were about to leave Kullak's camp he came to me with a daintily made pair of white sealskin slippers which he wanted to give me. When I asked him the reason he said that his wife expected the birth of a baby in a few days and he wanted me to see to it that she would have easy delivery and that the child should be a boy.

This was one of the least pleasant incidents that ever befell me among the Eskimos. I saw every uncomfortable possibility. Kullak had not the slightest doubt that I could by magical means control the birth both as to its safety and the sex of the child. If the childbirth turned out difficult or if the sex was other than male, there would be no explaining to him that anything but ill-will on my part was at the bottom of it. On the other hand, if I refused the present he would assume my ill-will from that moment and would equally blame me for whatever went wrong. Accordingly, I could do nothing but accept the slippers and promise that everything would be according to his desires.

As soon as we were away I explained the situation to my companions who saw nothing serious in it. But when we got to Kellett where Storkerson and Thomsen had a chance to talk with their wives they began to see what was involved. Both Mrs. Storkerson and Mrs. Thomsen believed that Kullak would certainly look upon me as a murderer if either his wife or the child were to die and that he would undoubtedly be greatly displeased, though both were to live, if the sex turned out to be female. Mrs. Thomsen, who was the more old-fashioned of the two, was even herself of the opinion that I could control the sex of the child if I wanted to, and that I should have no excuse if I did not.

Apart from the occasion of the slippers, the visit to this Eskimo family had relieved our minds. We now felt sure Wilkins had not been prevented by the early breakup of the ice from reaching the base of the southern section of the expedition. The *Star* might be expected at Kellett any day. We also knew that everything was going on well at the base camp. As the Eskimo report was that our people were short of meat except for the geese, I shot four caribou about twelve miles northeast of the base and asked the men to skin them and to bring home their dog packs loaded with meat, leaving all our other belongings at the deer kill. We would later send back from the camp to fetch them.

Then I hurried on and arrived at the Kellett base camp on August 9th, one day ahead of the estimate we had made in Melville Island. Levi was there alone. I give here my diary entry summarizing the information which he gave me on my arrival:

"*Monday, August 9: NEWS:* All has gone well in general. Nine Eskimos were around for several days the latter part of July and gave us several hundred geese. Levi and Bernard together killed one caribou and Bernard two caribou and one bear. They had also secured numbers of hares, ducks and ptarmigan. They once set a fish net but a seal carried it off. A new sod house has been built one hundred yards west of the old one and there we intend to winter. They (Captain Bernard and Levi) had concluded (because of our being, in their estimation overdue) that if we were not dead we were on Prince Patrick Island unable to cross and might come home after the ice formed in the fall, but not before. Considerable driftwood has been found on the beach and piled up near Cape Kellett. Bernard has made a wagon and has gone with Mrs. Storkerson and Mrs. Thomsen to fetch our dory (from Storkerson's trapping camp thirty miles north). A considerable ethnological collection has been made by purchase from the Eskimos. All our provisions are in good order and there is enough, except of condensed sled rations, for our real needs if no (whaling) ship comes.

If one comes, I shall have to buy vegetables, milk, coffee and butter to keep the men in good humor."

Nothing further of interest was noted during the next few days except that my party were mildly ill because of the change of diet. When you go off a mixed diet to a diet of meat alone, you never feel any worse for the change,—usually better. But when you have been for months on a diet of meat you almost always feel under the weather for two or three weeks after coming back to the mixed diet. I imagine the reason to be that meat is such a bulky food that the stomach gets accustomed to large quantities. Then when you eat the richer "civilized" food and fill the stomach as much as you used to with meat you overload it. It is likely that were one to go on a strict ration as to quantity no ill results would follow the change from meat to a mixed diet.

# CHAPTER XXXVIII

## WE ARE "RESCUED" BY CAPTAIN LOUIS LANE

AUGUST 11th was a momentous day. About quarter to four in the afternoon a schooner was sighted coming from the southeast and heading for Cape Kellett, some ten miles to the west. There was a heavy sea running, for a gale of the previous day had not yet abated, and we at first took the ship to be the *Star* bound for the shelter of the bight behind the Kellett sandspit. But a good look through the glasses showed the snub nose and the characteristic outlines of Captain Louis Lane's *Polar Bear*. We should have preferred the *Star*, but the coming of any ship was an event. I set out along the beach to get an interview, should the *Bear* run into shelter behind Kellett as I expected she would.

Driven by the strong wind she made much better speed than I, and dropped anchor behind the sandspit while I was four or five miles away. I learned later that they sighted me at about three miles. One of the Eskimos aboard saw me when looking the land over through his glasses for possible caribou. The captain and the ship's company then took a look and speculated upon who it could be. The opinion was evenly divided. Half the *Bear's* crew guessed I was a shipwrecked sailor off the *Sachs*. Somehow the idea had got abroad that the *Sachs* had been wrecked at Banks Island. How it started is hard to say unless somebody dreamed it, for she had come north the previous year with the intention of wintering, and naturally nobody could have heard from her since, one way or the other. The second half of the *Bear's* crew thought the man on the beach was one of the Victoria Island "blond Eskimos," over here on a summer hunt.

When I got to the end of the sandspit, half a mile from the ship, a whaleboat was lowered and came towards land with six men rowing and three or four passengers. Through my binoculars I recognized Captain Lane, Constable Jack Parsons of the Herschel Island Mounted Police, and Herman Kilian, engineer of the *Polar Bear*. Presently I heard from the approaching boat shouts of "He's not an Eskimo. He's got field glasses—he must be one of the crew of the *Sachs*." Presently I heard Constable Parsons say, "I think that's Stefansson," to which Captain Lane replied, "Don't you think it. The fishes ate him long ago." A few yards nearer I heard Kilian say, "By God, that *is* Stefansson." There were contradictions from several others but my identification was soon agreed on and Captain Lane shouted an order: "Don't a damn one of you move till I shake hands with him!" The boat touched the beach and the captain jumped out. His men delayed just long enough to obey him and then scrambled out after, and I received the most enthusiastic welcome of my whole life.

Assuredly the idea most definitely connected with the Arctic seems to be one of starvation, and Captain Lane's first thought was what he could give me to eat. He said he had the best cook that ever came to the Arctic and that the ship was full of good things. Now what would I like? I had only to say what I wanted and the cook would prepare me the finest dinner I ever saw. I tried to make clear that while I was hungry for news my appetite for food was very slight. In fact, the excitement had taken away what little I might have had. As for that, I had been in the North so long that I could think of nothing so good as exactly what we had been eating on shore—caribou meat. I had the delicacy to refrain from stating to Captain Lane that none of his food was as good, but I tried to put him off by explaining how eager I was for all sorts of news that I knew he could tell me. But these diplomatic protests evidently rather worried him, so I finally asked for some canned corn. Corn has always been my favorite vegetable yet I don't think I had eaten half a dozen spoonsful before I forgot to continue.

The *Karluk* was what concerned me chiefly and Captain Lane began to give me news of her. Incidentally he made some reference to "the war." Two or three times later during the next five minutes "the war" was mentioned either by him or some one else. At first it made no impression on me, but later I inferred that the Balkan War was still going on or had broken out afresh. Wilkins had been through two years of that war as a moving picture photographer and I knew from him as well as from the newspapers that conditions in the Balkans were such that war might break out at any time. But finally some one mentioned that some of the *Karluk's* men had gone to "the war." It was only then that I realized this could scarcely be a war in the Balkans and I asked, "What war?"

There was a chorus of replies. "Don't you know about the war? Didn't you know that the whole world was fighting?" Somehow it seemed to them impossible that anybody could not have known.

Then Captain Lane in a few sentences told me that more than a dozen nations were at war, and all the "great nations" except the United States. Even in the neutral countries many of the industries of peace had been nearly discontinued, making way for those of war, and wealth was being piled up by the sale of weapons and munitions to one or another of the combatants and frequently to both. As for the "Laws of Nations," most of them had been broken and it was understood that those not yet broken would go upon occasion. "War psychology" had taken the place of the calmer, more orderly thinking of former years. Even in the neutral countries passions were highly inflamed and in the countries at war elaborate efforts were being made to stir up hatred as a means of securing more united support for war measures.

The crew of the *Polar Bear* were mainly sympathizers of the Allied side and they told what had become ordinary stories of German atrocities. They said, too, that the German people were being deceived by their rulers into the support of a war of aggression which they would not tolerate if they knew the facts. But there were four or five German sympathizers who said the stories of German atrocities were "Allied propaganda" and that Germany was fighting a just and a defensive war. Feeling ran high aboard the *Bear* as everywhere else, but the German sympathizers were in a minority and dared to present their side only by asking me "in fairness" to read some American-German papers they had.

The Allied sympathizers said the net was already tight about the Central Powers, they were closely blockaded, starvation was already weakening them, and they could not long hold out. The German sympathizers said their armies were victorious on every front, that there was food to last for ten years, that the Allied courage was broken and that German victory would soon come.

That is the way the news of the Great War came to me, August 11, a year and half a month after it started. The *Bear* had left the last telegraph connections in Alaska some three weeks before, so they brought news of nearly twelve months of fighting. There was hopeless confusion in this news on every point except the blackness of the cloud that had descended upon the earth. The American newspapers and magazines aboard were equally at variance. There were articles telling of horrible German atrocities and articles saying in effect that none had been committed.

The Captain and crew of the *Bear* agreed upon one prognostication as to the war; some said one side would win and some the other, but all said the war could not last many months longer and a few thought it would be over before they were back at Nome in September.

The question of how the news of a world cataclysm would strike a person who heard of it only when the tragedy had been a year in progress seems to have been generally interesting to newspaper editors and paragraphers. First a reporter of the type who finds the news or makes it, sent over the wires a "story." I have paid a clipping bureau for several hundred copies of this account, and it must have appeared in every American paper that has a telegraph service, and in many European papers. A story that isn't true is usually interesting—that is what it is made to be. This was extremely interesting, as the number of editorial comments proved. It was usually printed under the heading, "Stefansson Wept." After a dramatic account of how the news of the war was brought to me comes the climax: Under the crushing effect of the tragedy that had come upon the world I broke down and wept. These were not the ordinary snivelings of a sentimentalist—they were the tears of a hero who had borne all the terrors of the polar wilderness without flinching and who had met stolidly even his own semi-miraculous rescue from the jaws of death. For it appeared the *Polar Bear* had rescued me from starvation. (That she did so with a warmed-up tin of corn was not specified.)

The last ripples of my escape from death took the form of advertisements: "The man who rescued Stefansson rides an Overland." The ads. did not say that my "rescuer" bought the Overland, and I hope he got it for nothing. Certainly I have every reason to wish him well—not the inventor of the story but Captain Lane himself, who did nothing wilfully to start the yarn and who did me many favors then and after. His coming did not have even a family resemblance to a rescue, but it was of great significance in our expedition, as the sequel tells.

Like any great event in life, such as the death of a friend or relative, I found this news of a world war hard to realize. It was certainly hours, perhaps it was days, before it began to weigh upon me as it did then for all the years after. Through the circumstances of there being several German sympathizers on the ship and through the nature of some of the American magazine articles I read later, I never had the feeling of certainty that our side would win, especially as the Americans had not entered the war. I could not understand why they had kept out, but if they had incomprehensibly refrained so far they might continue to refrain.

But I did think the war could not last another full year. So my mind continued fearful of the news we might receive next year, or whenever we next got news.

This may seem the logical place to record what had happened to the *Karluk*, for Captain Lane brought me considerable information. But much of what he told was contradictory—he had heard many conflicting reports—and it was only after I had seen Hadley that the situation became clear in my mind, so I shall reserve the story.

Of the affairs of the southern section of the expedition Captain Lane could tell that the *Alaska* and *Star* had both reached a harbor on the south shore of Dolphin and Union Straits in August, 1914. (This has since been named Bernard Harbor, after Captain Joseph Bernard of the *Teddy Bear*,* a nephew of our Captain Peter Bernard.) The *Star* had remained but Dr. Anderson with the *Alaska* had returned to Herschel Island for a second cargo. On her way east the *Alaska* had gone aground in the harbor at Cape Bathurst in a gale and by the time they got her afloat it was too late to proceed east, so she had to winter. Dr. Anderson had left her in charge of Captain Sweeney, going himself to Bernard Harbor by sled in the fall. During the winter Engineer Daniel Blue had died of scurvy, from which disease Captain Sweeney had barely recovered; the rest of the crew were Eskimos who, through their different food habits, had not suffered.

Captain Lane had learned these things on his way east. He was able to add that the *Alaska* this summer had proceeded to Herschel Island to meet the schooner *Ruby* on which the Government was sending us supplies. These were the supplies that had failed to get in last year, 1914, which showed how foolish it would have been to rely on them then. It was to protect ourselves against their possible non-arrival in 1914 that I had bought the outfit of Captain Andreasen and Duffy O'Connor, a purchase now fully justified by the event.

About the *Star* in the present summer Captain Lane knew nothing directly. He had been told of how she had been taken away from Wilkins the previous year and he was of the opinion, on the basis of reports heard on the mainland, that Wilkins would be unable to get her back. To corroborate this he cited that it had been an unusually early spring everywhere and especially east of the Mackenzie. At Cape Bathurst there had been easterly winds and open water for a month. Dolphin and Union Straits must be long ago free of ice, and the *Star* should have arrived two weeks ago if she was coming. The conclusion was that she had either been wrecked in the east or else Dr. Anderson had refused to give her up to Wilkins.

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* For some account of Captain Joseph Bernard of the *Teddy Bear* see references in the index to "My Life With the Eskimo."

After full discussion I fell in with this view that the *Star* was not coming. The Captain was able to give me the definite information that large supplies were being sent in to us by the Government on the *Ruby* with my old friend Captain Cottle in command—the most experienced skipper now in these waters and a man who would bring his ship in if any one could. Lane felt sure the *Ruby* was already at Herschel Island unloading supplies into the storehouses there, according to her orders. The *Alaska* would be there to receive the stores wanted for the southern section, but she had no engineer and her engine was crippled. Captain Lane thought there might be a spare engineer on the *Ruby* but we feared Sweeney would not suppose himself to have the authority to hire him. It seemed doubtful whether the southern section any more than we at Kellett would get their supplies from the *Ruby* unless we did something about it.

If the *Star* was not coming my only chance of making use of the supplies the Government had sent in to Herschel Island was to engage the *Polar Bear* to fetch such of them as we needed and to land them for us as far north of Kellet as she could. I accordingly chartered the *Bear* and we started for Herschel Island August 12th with the intention of towing the *Alaska*, if necessary, to Bernard Harbor and then coming up to Banks Island to land the supplies for the northern work.

On the way south Captain Lane had time to go more into detail as to news that affected the expedition.

The death of Storkerson, Ole Andreasen and myself was everywhere agreed on. The story confirmed, with many additions, everything Wilkins and Bernard had told me a year ago to that effect. All along the coast from Point Hope to Cape Bathurst my companions and I were personally known to the Eskimos, all of whom were grieved and none hopeful. Not only was our death certain on grounds of Eskimo theory, but there was much concrete evidence. Between Cape Bathurst and the Mackenzie, near Point Atkinson, a sledge with dead dogs still attached by the harness had drifted ashore. Both the sledge and one of the dogs had been recognized as mine by an Eskimo who had once traveled with me. At Herschel Island the summer of 1914 the Eskimos had seen with their telescopes from the top of the island three men on an ice cake four or five miles out in the pack. This was reported to the police and boats were launched, but the weather was bad and much ice about. Only wooden boats were available and in these it was unsafe to go in a gale out among the tumbling and jarring floes, and the attempt was given up. It was agreed that had skin boats (umiaks) been available our lives might have been saved.

This was not our only appearance. A little earlier in the season we three had been seen on a cake of ice near Icy Cape, some 600 or 700 miles west of Herschel Island. In that case also rescue had failed, although umiaks were available. Probably the polar bears that were impersonating us heard the excited cries of the rescuers and made off; or maybe they were seals and dived.

Among the white men on the coast only three had believed we might be alive—John Firth, the Hudson's Bay Company's factor at Fort Macpherson, Inspector J. W. Phillips of the Royal Northwest Mounted Police, and Captain Matt Andreasen, Ole's brother.*

I have not since 1913 seen Mr. Brower or Mr. Hopson at Point Barrow, and I still hope they may have been among the optimistic. Our fellow members of the expedition had apparently been unanimous in thinking us gone and had written to that effect to Ottawa.

At Ottawa at least two men still had faith in us—R. W. Brock, director of the Geological Survey, later Deputy Minister of Mines, and G. J. Desbarats, the Deputy Minister of Naval Service. Mr. Brock was no longer, properly speaking, at Ottawa, for he was on leave of absence as Major Brock of the Canadian Expeditionary Forces. Mr. Desbarats was at his post as when we sailed, although now heavily laden with the burdens incident to the expansion of the work of the Naval Service in war time. He was therefore still in charge of the affairs of the expedition.

I had discussed with Mr. Desbarats fully my ideas of the methods of polar exploration, and have been deeply gratified to learn that he, together with a handful of my intimate friends in various countries, held to the view that in striking north over the ice from Alaska I was merely carrying out instructions according to the method which I advocated. The American scientific societies which originally backed the expedition, and later the Canadian Government, had put the expedition in my hands knowing I held these theories, and he considered it illogical to become panic-stricken through finding out that I had carried no supplies with me out on the ice when I had always maintained that this was a safe thing to do. While others theorized on how and when and where and why we had died, he assumed as a working hypothesis that we were alive and in Banks Island.

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* Many of these facts were told me either by Captain Lane or by his second officer, William Seymour, a man whom I had known for years and liked, since we took turns using the same bunk, by his invitation, when I was Captain Cottle's guest on the *Karluk* in 1907 between the mouth of the Colville River and Herschel Island. But I have since picked up some additions and corrections which are here embodied.

But the universal feeling at Ottawa was against the probability of our being alive. Opinions of various polar authorities, both geographers and explorers, had been sought and were uniformly adverse. In effect, they amounted to saying that the theory on which our work was based was unsound and the undertaking had in consequence been foredoomed to failure.

Of the polar authorities Peary was the most careful in his published opinions. I had discussed all my ideas with him several times. He was one of the fairest-minded men I ever knew and the readiest to yield a point on the appearance of new evidence no matter how strongly he might previously have been committed to the opposite view. Peary himself had said in print that no food or fuel could be secured on the polar sea, but he had also said * that he had seen a seal in some open water only about 250 miles from the Pole (near N. Lat. 86°). When I pressed the point that this seal was both food and fuel and obtainable, he admitted it but thought the seal had been an exception. But he conceded that as he had never paid much attention to signs of seals, because he had thought them rare or absent, they might really have been numerous where he supposed them few. So our discussions had ended by his saying: "Maybe you are right. But be careful and turn back in time." Similarly now, when his opinion was asked by reporters or the Government, he was less definite than most in his pessimistic attitude. In fact, as he told me later, he based his opinion of my probable death mainly on *the report that it had been my plan when I left Alaska to return to Alaska within a few weeks.* This failure to carry out a plan which he thought I had announced, together with the admittedly hazardous nature of the undertaking, were his main reasons for thinking us lost.

The reason why every one thought we had intended to return to Alaska was merely the common view that unless we did so we would starve. Yet my own letter sent back with the support party from the ice to Dr. Anderson had been clear that he was to assume if I did not come back before midsummer, 1914, that I had gone to Banks or Prince Patrick Island. In the hurry of separation out on the ice I had not made out for transmission to the Government a duplicate of these instructions. Indeed I did not think it necessary, for I supposed that if I did not come back Dr. Anderson would send to Ottawa a copy of my instructions to him and would summarize them in his report. But he did neither, and the Government and the press were left in the belief that my intention had been to come back to Alaska, and that my failure to do so, instead of meaning our probable success and our safety in Banks Island, meant the failure of the enterprise and our death at sea.

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* "The North Pole," p. 250.

Thus it came about that Peary and others based their gloomy views in part on reports from which a correct statement of our plans had been suppressed. Thus came about, too, various other misunderstandings, among them some that hampered McConnell in his attempt to organize a "rescue expedition."

When I engaged McConnell as a member of our expedition I did so by telegram. As he was not known to me then and I was taking him on the strength of favorable report merely, I worded the telegram to mean that I would take him on trial for one year, sending him home at the end of that time if transportation were available and I had concluded that I did not want him. The arrangement was to be terminable at my option but not at his. At least that is what I intended it to be, but he understood that it was an arrangement for one year only on both sides. I soon found him one of my best men even under the handicap of a weak ankle that had been sprained before and kept getting sprained on slight provocation. When it came to our parting on the ice in April, 1914, he considered his term of engagement over and wished to go home. Although his services had been most satisfactory I could not urge him to stay, partly because the telegram by which I had engaged him was quite open to his interpretation and partly because I thought the weak ankle was a drawback. I suggested to him, however, that if he changed his mind he might come north with Wilkins in the *Star*. Wilkins and he were great friends. Thus we parted on the ice.

McConnell later decided not to join the *Star* but to proceed south. This may have been a fortunate decision, for it enabled him to take an important part, as will appear later, in the rescue of the *Karluk* crew from Wrangel Island. In that capacity he came in harrowing contact with the scenes and circumstances of the loss of eleven men of the *Karluk* crew. He formed the opinion that eight of them might still be alive and when he got home initiated the plan of a rescue expedition, having in view both the eight missing men of the *Karluk* and our party of three.

The connection of the eight with the rest of the *Karluk* party had been severed near Wrangel Island. Captain Theodore Pedersen had through the press advanced the view, concurred in by many, that if we were alive we must be on the ice near the place where the missing men of the *Karluk* had last been seen. Pedersen assumed a strong westward drift of the ice north of Alaska and had in mind the common report, doubtless reliable, that in the spring after we left shore, especially in May and June, there had been enough open water north of Alaska to prevent our landing there. His argument was based like the rest on the same false assumption that we had intended coming back to Alaska. I quite agree that had we tried to do so we should either have lost our lives in a too hazardous attempt to get ashore over rapidly moving ice made treacherous by summer heat, or else, as he said, we should have been swept west past Point Barrow.

McConnell's rescue plan made use of similar reasoning. Airplanes were to be employed. A ship would take the airplanes to the north coast of Alaska and they would make reconnoitering flights of seventy-five or a hundred miles from shore, then twenty-five or fifty miles at right angles to the outward course and then back to shore, landing twenty-five or fifty miles east or west of the starting point. Each trip would be a non-stop flight resulting, he considered, in the search of from two thousand to five thousand square miles of ice and in our rescue if we were on this ice. All this was to be done in July to September, 1915.

The rescue plan met discouragement of several sorts. Most people were sure of the death of all eleven of us and deprecated the "further useless risk of life." Many who got their opinions from airplane propaganda in the newspapers thought the flying part feasible. But sober authorities knew the airplane was not then up to the stories of the press agents. Orville Wright, while expressing no opinion on the practicability of the rest of the plan and having full sympathy with any attempt to rescue men in distress, emphasized the impracticability of the airplane part.

But most decisive (and most pleasing to me when I learned it) was the opposition of the Canadian Department of Naval Service.

Before our sailing I had discussed with the Minister of Naval Service, Mr. Hazen, now Sir Douglas Hazen, the question of rescue expeditions. Subsequently I wrote at his suggestion a letter addressed to him, giving my opinion that if our expedition, or any part of it, were not heard from for a year or two no alarm need be felt and nothing should be done towards the rescue of any one whose approximate position and actual distress had not been directly and credibly reported. As for my own section, I gave it as my opinion that if we got into difficulties from which we could not extricate ourselves it was unlikely that any one could find us in time to help us and without exposing his party to at least as great a danger as we were in ourselves. It was my belief that in case of voluntary or involuntary separation from our ships our party could live on game and walk out to some outpost of civilization on the north coast of Asia or America or on the west coast of Greenland.

Mr. Desbarats explained when approached by McConnell that his department had my own written opinion that no "rescue" should be attempted. He considered the probability small that if our definite location were unknown any one could find and help us. So his reply was in substance that, apart from accidents, they had confidence in our ability to look after ourselves and that their support of a rescue expedition would be inconsistent with a policy formulated by me and agreed on by them and me before our expedition sailed.

As for the eight men of the *Karluk,* Mr. Desbarats relied on the opinion given him by Captain Bartlett that these men had not been properly outfitted when they were separated from the rest of his party and must for that reason have died long before.

While McConnell seems to have pinned his faith to the arguments advanced by Captain Pedersen, he published the statement frequently that it had been my intention not to come back to Alaska but to proceed to Banks Island. This was most explicitly set forth in an article by H. E. Rood in the New York Sunday *Sun* accompanied by a map showing a star at northwest Banks Island where the *North Star* was to look for us in the summer of 1914. But somehow this point of McConnell's failed to impress itself on those most interested in our fortunes, probably for two reasons. First, McConnell himself was not proposing to search for us in Banks Island. And second, everybody who knew the truth had suppressed the information that my orders had been disobeyed and that the chief danger to my party lay in the fact that our poorest ice ship, the *Sachs,* instead of our best one, the *Star,* had been sent to Banks Island. The *Sachs* did not even have orders to come as far as the rendezvous where we were waiting for the *Star*, but only to Kellett, more than a hundred miles farther south. This poor ship might have been expected to fail even with proper orders, leaving us in difficulties through the failure of support we had counted on.

The Arctic is considered by many an unpleasant place to wait for a ship that has never been sent. Certainly Greely found it so at Cape Sabine when he lost 18 out of 25 men through the miscarriage and disobedience of orders by those who were to meet him or to make a depot for him at an appointed place, and his was but one of many similar arctic tragedies. My own faith that we should not starve so long as we had ammunition could have been little comfort to those whose conviction of our death was based on disbelief in the prevalence of game in the Arctic, and disbelief in the ability of white men to get what game there is. Furthermore, as McConnell said, we had when we started only 400 rounds of ammunition to feed three men and six dogs for more than a year, and this might have been expected to need supplementing if we made no connection with one of our ships.

The star on the *Sun* map where the *Star* was supposed to meet us and didn't try to, was the only danger sign in the whole situation, but nobody saw the meaning of it.

I am truly grateful to McConnell for his good intentions and his efforts to publish the truth. But I cannot think of anything less tempting in itself than being rescued. It was bad enough to be saved from imminent starvation by Captain Lane with a can of warmed-up corn. It would have been worse to have an airplane swoop down on you just when you were comfortably winding in the wire after a three-mile sounding and sniffing the fragrance of boiling fresh seal meat.

So far I have considered these rescue proposals from the point of view of my party of three. As for the eight men that were lost, their situation will be made clear in that section of the Appendix given to Captain Hadley's story of the *Karluk*. I shall say here merely that I concur in the belief that long before McConnell could have launched his expedition they were dead.

The only concession made by the Government to the demands for a rescue expedition was that they requested all whalers and traders who go up in the western Arctic to keep a lookout for us or traces of us. Captain Lane had held these requests in mind while on the western part of his cruise. When once he got as far east as the vicinity of Banks Island the possibility of finding any of us had been given up, but he was on the alert for signs of the *Sachs* which, because of her twin propellers, he had expected to get damaged or wrecked as soon as she got into the icy waters on the west coast of Banks Island.

# CHAPTER XXXIX

## A SUMMER VISIT TO HERSCHEL ISLAND

ON the way to Herschel Island we stopped at Cape Bathurst to see if there were any news of Wilkins or of Dr. Anderson's party in the east. There was none of either. Many anxious inquiries were made of me regarding Captain Bernard. The news of his death, I was told, had come a few days before. Since I had left the Captain entirely well at Kellett only yesterday it was news of peculiar interest to me. My informants were positive, however, and when I tried to engage Eskimos to go back with me to Banks Island the rumor was started that I was trying to conceal the fact of Bernard's death so as not to scare others from going north with me. There were only two or three white men at Bathurst at this time, but I gathered that they no less than the Eskimos were in doubt which story to believe. When I started to trace the yarn I soon got it back to a man who had dreamt it—but the dream had been very vivid. Even when I was able to produce the dreamer, and in spite of the corroboration of my story by the *Polar Bear's* men, some of the Eskimos still believed in Bernard's death. In these days of modern skepticism such faith is refreshing.

Although I now had little hope that Wilkins would arrive with the *Star,* I left instructions for him with Tom Emsley of the *Rosie H.** If he came he was to proceed to Kellett and thence as far north as he could get along the west coast of Banks Island, preferably to the northwest corner, Cape Alfred.

On the way to Herschel from Bathurst we fell in with a school of bowhead whales. This seemed such a wonderful chance to get dog feed for next winter that we devoted half a day to the killing and cutting up of one of these great animals. It was rather large—said to be between sixty and seventy feet long. The shot that killed it was fired by Constable Parsons. Parsons had been an officer on a sailing ship before he became a policeman and he is the sort of competent man that can turn his hand to anything. Still it was a surprise to him as well as to the rest of us, I think, that he was able to despatch this huge beast as neatly as the most expert whaleman.

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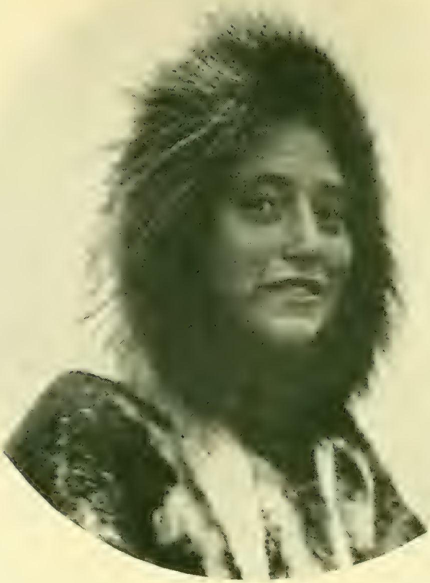
* See various references to the *Rosie H.* and her owner, Fritz Wolki, in "My Life With the Eskimo."

At Herschel Island our arrival on August 16th caused great excitement. The *Ruby* was there beginning to unload; there were also four smaller schooners, the Hudson's Bay Company's *Macpherson,* Captain Fritz Wolki's *Gladiator,* Captain Matt Andreasen's *Olga,* and the Church of England's *Atkon* (or *The Torch*). As ice pilot on the *Macpherson* was Jack Hadley, from whom I was now at last to hear the full story of the *Karluk* tragedy. There was also our own *Alaska.* Including sailors, police and missionaries there were probably over fifty white men with perhaps two hundred Eskimos. All but a few sailors were old friends of greater or less intimacy who had been thinking us dead now for more than a year, some of them, I believe, with considerable regret. But my arrival was a triumph for Inspector Phillips and Captain Andreasen who had been maintaining the difficult contention that we were alive. Captain Andreasen, in fact, had just the day before been through a tall argument, including a bet, with Captain Wolki, who had drawn on twenty-six years of experience as a whaler and trapper at or east of Herschel Island for arguments showing the folly of trying to "live off the country" in the Arctic. "Stefansson had a wonderful run of luck when he lived off the country from 1909 to 1912," he had argued, "but it was luck, and luck will turn." When the Captain came forward through the crowd to shake hands as I landed, he remarked that he had lost his argument and a bet but was glad of it. Matt Andreasen went back and forward through the crowd saying, "I told you so."

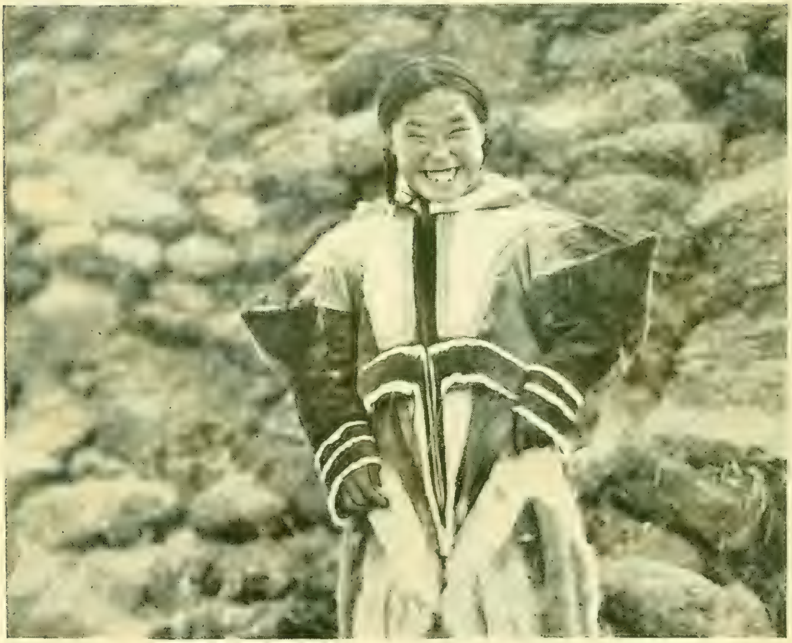
It became evident as soon as I talked with Captain Cottle that we should have to wait several days to get at the stores he had brought us, for some of the most important items were in the bottom of the ship and would not become available until several hundred tons of the Hudson's Bay Company's goods had been unloaded. This was the largest consignment of trade goods ever brought in a single ship to Herschel Island, though but a small fraction of the huge quantities that used to be brought annually by the whaling fleet, which numbered more than a dozen ships each year from 1889, when the first vessels to winter east of Point Barrow did so at Herschel Island, till 1906 when the invention of a commercial substitute for whalebone brought the price of "bone" down from four or five dollars the pound to thirty or forty cents. A large bowhead whale has 2,000 pounds of "head bone" and was worth $8,000 to $10,000 and

THE HARBOR AND VILLAGE, HERSCHEL ISLAND.

ESKIMO BOATS AND THE *Alaska*, HERSCHEL ISLAND.



Mamayauk, Half-white Girl,
Cape Bathurst.



Copper Eskimo Girl.

fortunes were made in whaling. The largest catch I have heard of was sixty-three whales in two years by a single vessel. Since many other ships also caught large numbers, the market was temporarily glutted and the price dropped to half, but even so the profits were fabulous. But after 1906 a big whale was worth only from $400 to $800 and the whaling fleet vanished from the Arctic in a year.

Arctic whaling is not likely to be resumed except for fertilizer or for food. Let us hope the good sense of the world will soon begin to discountenance whaling for anything but food. There are several countries now where whale-meat is considered good to eat. If we do not care to accustom ourselves to whale-meat, international arrangement might be made so that the people who already like it can get it, leaving that much more beef and pork for the others. That money can be made through turning whale-steaks into fertilizer should not be argument enough for allowing such waste of food to go on when the world is drifting into an inevitable meat shortage. The chemists have learned to make fertilizer out of thin air, but steaks are as yet beyond their power.

The large cargo of building material and trade goods shipped to Herschel Island this year on the *Ruby* was to lay the foundation for a wide expansion of the Hudson's Bay Company's business. It was doubtless the opportunity for pure trading created by the disappearance of the whaling fleet that had induced the "Great Company" to make this new departure, but in part it was our exploratory work of 1908-12. Until that time it had been supposed that between Cape Bathurst and King William Island there were no longer any Eskimos with whom trade could be established, but during those years the work of Dr. Anderson and myself had shown that most of these coasts, both the mainland and Victoria Island, were as thickly populated as Eskimo countries generally are (though that means only two or three persons per mile of coast), by a people so little reached by modern commerce that their weapons were bows and spears, their cutting and piercing implements copper or stone, and cloth so little known among them that the pieces that had drifted in by intertribal trade were considered to be the skins of peculiar animals.

This was an opportunity which the Company, in spite of its 245 years, had the youth and foresight to grasp. Their way of doing it was to send in the cargo of the *Ruby* and a small power schooner, the *Macpherson*. Part of her cargo the *Ruby* would unload at Herschel and part at Bathurst, laying the foundations of two stations. Later the chain of trading posts would be lengthened eastward.* The man to whom had been entrusted the management of the new district was Mr. Christy Harding, an Englishman born in India but long identified with trading in the far north. When I first went down the Mackenzie River on my way to the Arctic in 1906 he was in charge of Fort Resolution on the south shore of Great Slave Lake, and I saw him there again on my second journey in 1908. His wife, who was with him now, was born at Fort Simpson, only about two hundred and fifty miles south of the arctic circle, the daughter of Julian S. Camsell, who for a long time was in charge of all the Company's posts in the arctic and sub-arctic section of the Mackenzie valley.

Our compulsory wait while the bottom of the *Ruby* was being uncovered I employed in engaging several Eskimo families. The men we needed, though experienced white men would have been as good if available; the women as seamstresses are priceless. Our field clothing is almost entirely made of the skins of seals and caribou and in securing these the best white hunters are usually better than the best Eskimos. But the preparation of the skins is tedious to any one but Eskimo women brought up to the idea that it is their proper work, while such skill as theirs with the needle is acquired only by years and generations of practice. All their needlework is excellent and their waterproof seams are probably the only really waterproof sewing in the world. Our bootmakers do not conceive that a seam may be in itself waterproof, and attain their ends by rubbing or soaking some sort of greese into the needleholes. Among the Eskimos no seam is considered passable unless it is waterproof without greasing. If a good seamstress sees you rubbing oil on boots she has made she is likely to become angry, considering it an insult to be suspected of a seam that needs grease to cover up deficiencies of workmanship. When a woman finishes the last seam of a waterboot she inflates it like a balloon, twists the mouth as the small boy does with a paper bag he is going to "bust," and waits for a few minutes to see if any air is escaping. She gives it a more severe test by applying steady pressure which multiplies the strain several times. Then she holds the seam to her cheek to detect the escape of air, or near a steady lamp or candle-flame to note the slightest flicker.

Seamstresses such as these we need so badly that we are willing to engage along with them comparatively useless husbands and families of several children. And we even try our best to get these Eskimos, especially the children, to dress in the best flannels and silks we have been able to bring north with us—intended for use if we can't get Eskimo clothing—so as to leave the mother free to make clothes for us instead of her family.

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*Two more posts have since been started, Fort Bacon on the south shore of Dolphin and Union Straits, and a temporary station, which will soon be permanently located, on the south shore of Coronation Gulf about a hundred miles east of the Coppermine.

Besides seamstresses we needed sealskins, extra dogs, and many other things of which I was able to buy a good outfit. The spare time between these transactions I used in writing a report to the Government. I had but a few personal letters to answer, for of all the friends who commonly write when I am in the North, only one family, that of Mr. E. W. Deming, the artist, and some friends at the American Museum of Natural History, had written a line. The rest had supposed me dead.

The Government itself had addressed no communications to me that year. All of them had been directed to the expedition's second-in-command, Dr. Anderson. I thought at the time that this must be because every one at Ottawa including even Mr. Desbarats had supposed me dead. I have learned since that this was not quite correct. Although Mr. Desbarats thought there was still chance of my being alive, he had understood from Dr. Anderson's reports of the preceding year that no communications could reach me in Banks Island directly. He knew the *Star* had been taken to Coronation Gulf, though he did not know it had been taken against my orders, as he had never received a plain statement of what the orders were. But he knew the *Sachs* had been sent to Banks Island, he knew her unfitness for those icy waters, and he feared the very thing that had happened—that she had been incapacitated for her search for us by injury from the ice. He accordingly reasoned that if I were alive I could not be reached except through a ship going north to search.

Dr. Anderson's reports together with the opinions held at Ottawa determined the general tenor of the instructions for the year. These instructions may be summarized as follows:

It was thought that the work of the southern section of the expedition should be terminated the summer of 1916 and the section should return to Ottawa in the autumn of that year. But the fate of my party up in Banks Island must not be left undetermined. Dr. Anderson should therefore send one vessel, and if necessary two, to Banks Island for the purpose of doing anything that might be there required.

These instructions meant, when taken literally, that the work of the vessels to be sent to Banks Island was one of rescue. The underlying assumption seemed to be that which was justified by the "facts" as they were known at Ottawa—our foray into the ice might have been brave but it could not have been successful. The wording showed a concern about our possibly having survived an inevitably fruitless journey. But here we were safe, and successful to the extent of having proved that we could live by hunting where death from starvation had been looked upon as the inevitable sequel to the running out of stores brought along. Moreover, we had found land of extent as yet unknown. I felt sure that if I could have telegraphed these facts to Ottawa I should have received orders to proceed with our explorations. I decided to proceed and this decision was approved at Ottawa when the reasons for it were presented in my reports.

One of my reasons for chartering the *Polar Bear* had been that we might have to tow the *Alaska* to Bernard Harbor. I found now from Captain Sweeney that while the engine was in almost as poor a condition as reported, he was not so badly off for an engineer, for some months preceding his death Engineer Blue had had for an assistant a Siberian native called Mike, who was now equal to the job so long as nothing went wrong. We feared, however, that if something were to break, which seemed not unlikely, his skill would be inadequate. Accordingly, I arranged with Captain Cottle for the release of one of his engineers, J. E. Hoff, who had signified his willingness to work for us if he could get his freedom from the *Ruby*.

While we were still waiting on the unloading of the *Ruby* there arrived from the west the motor schooner *El Sueno*, commanded by her owner, Captain Alexander Allan, bound east along the coast beyond Cape Parry with no definitely selected wintering place. Trapping was the Captain's main object and he was carrying only half a cargo. This seemed an excellent opportunity to transport to Dr. Anderson supplies beyond what the *Alaska* would be able to carry, especially since the Government had sent us more goods than the *Polar Bear* and *Alaska* between them could possibly take on. I also learned from several men then at Herschel Island that Captain Allan was a mechanic of more than ordinary skill and was considered in western Alaska, where these informants of mine had known him, to be unequalled in his ability to repair engines, especially when the means at hand were limited. Captain Allan agreed that when the trapping season of the coming winter was over he should proceed to the base of our southern party at Bernard

Harbor and help make the *Alaska* ready for the summer of 1916, as well as overhaul several gasoline engines which our men were using both for the propulsion of their regular launch and for other boats to which power could be attached. My success in making this arrangement with Captain Allan made me feel very much more at ease with regard to the future so far as the southern section was concerned.

At this time the mission schooner *Atkon,* under command of the Reverend H. Girling, was ready to start but lacked two very important things: they had no experienced sailors aboard and there was no local man available who could guide them through the devious channels of the Mackenzie delta. Had the *Atkon* been a bigger boat and less heavily loaded she could have taken the open sea route, passing outside the delta shoals, but she was not strong and without really expert sailors this would have been too dangerous. I had already arranged for the transfer of Hadley from the service of the Hudson's Bay Company to that of the expedition, and one of my recently engaged Eskimos, Illun, knew all the intricacies of the delta channel. I accordingly loaned Hadley and Illun to the *Atkon* to take her through as far as Cape Bathurst, expecting that they would get there long before we did, having several days the start.

As our stay at Herschel Island kept lengthening, it became clear that before we could get our cargo aboard and the goods landed in Banks Island I should have had to pay out in chartering fees as much as the *Polar Bear* was worth. When I realized this I approached Captain Lane on the question of whether the ship was for sale and found that she was. I eventually bought her. The price was necessarily high in view of the fact that selling the ship at this time would destroy all his prospects of profit from trading or whaling during this voyage. I had formed the opinion of the *Polar Bear* the year before that she was an ideal ship for our work and had so reported to the Naval Service, urging that if any ship were needed for work in icy waters (as, for instance, in Hudson's Bay) it would be well for the Government to buy her. Moreover, though the price seemed high at the time, it was not as much as Captain Lane would have been able to get had he gone south and disposed of his ship at the time when wooden vessels were at the top of their war price during the period of greatest scarcity of shipping.

A condition of sale of the *Polar Bear* was that Captain Lane could get some other ship in which to take out with him his purchases of fur and those of his crew who did not care to enter the service of our expedition. For this purpose I was able to buy from Captain Wolki the small schooner *Gladiator* and hand it over as part payment for the *Bear.*

The engaging of Eskimos as it had to be done at Herschel Island is by no means a simple thing. You cannot offer a salary for the year and let it go at that. You must arrange that the Hudson's Bay Company at Fort Macpherson gives ten caddies of tea to some remote relative and that the Mounted Police promise to transport a piece of baggage to some other relative. You furnish flour to a cousin, transfer a dog team to an uncle and altogether you may have to make one or two dozen special arrangements in connection with the engaging of a single family. What with the buying of dogs, the loading of cargo, and the finishing of reports to the Government, I had no time to keep up diary entries, so that most of what happened during this time I have to write from memory. One of the results is that, although it is a rather important day in the history of the expedition, I do not know on what exact day we sailed from Herschel Island although I think it was between the 22nd and 25th of August [1915].

On arrival at Cape Bathurst we found, much to our surprise, that the *Atkon* had not yet arrived. We waited a day and the weather was excellent but still she did not come. Everyone began to fear shipwreck, and I was especially concerned about Hadley. Although so anxious to push ahead to Banks Island I could not think of leaving these men possibly stranded on some delta mudflat, especially Hadley, who had already in the service of the expedition been through the trying experiences of Wrangel Island. Accordingly, the *Gladiator* under command of William Seymour was sent out to look for the *Atkon.*

A day after the *Gladiator* started the *Atkon* arrived, having been merely delayed by getting aground several times in the shallow channels of the delta. The two ships must have passed in fog somewhere near Point Atkinson. We could not leave Seymour and his companions behind any more than we could Hadley, so now there was a second wait for the *Gladiator.* There are few enterprises so likely as a polar expedition to be turned from success to failure by the weight of a straw. On the basis of what we now know, this delay at Cape Bathurst put upon us some of the heaviest handicaps against which we had to struggle during the next two years.

At Cape Bathurst we learned that, contrary to our best reasoning, the *Star* had arrived from the east a day or two after the *Polar Bear* had left, and I received a brief note from Wilkins saying that he had proceeded to Cape Kellett. Immediately upon the arrival of the *Gladiator* we crossed to Kellett. Wilkins had left there some days before and had proceeded up the west coast of Banks Island, with the aim of wintering somewhere near the northwest corner or on the north coast unless exceptionally favorable circumstances should enable him to cross to Prince Patrick or Melville Island.

On September 2nd Captain Lane left Kellett in the *Gladiator* with those of the *Polar Bear* crew who had been either unwilling to stay or unsuitable for our needs. On that day also the wind changed. For weeks it had been blowing nearly continuously off the land, with the west coast of Banks Island consequently open to whatever ship desired to sail north. But the currents in the Beaufort Sea are such that though the wind may blow steadily from the east clearing all the sea south of that latitude the heavy pack is never far distant. We knew immediately upon the setting in of the northwest wind that it would not be more than a day or two till the whole coast of Banks Island was blocked with impenetrable ice to remain while the wind remained in any westerly quarter.

Almost up to the moment of Captain Lane's sailing it had not been definitely decided who would remain with us as the crew of the *Polar Bear*. On the captain's recommendation I retained those men who were in the same capacities they had before occupied. My own inclination had been to make William Seymour commander of the ship, for I had known him most favorably for eight years and had the highest opinion of his ability. But as he had been second officer with Captain Lane where Henry Gonzales was first officer, I decided, upon Lane's recommendation and with Seymour's consent, to leave the relative rank unaltered, making Gonzales commander of the ship and Seymour first officer. Hadley was second officer, Herman Kilian was chief engineer and John Jones, formerly engineer of the *Gladiator*, was second engineer. Martin Kilian, Harold Noice, James Asasela, known as Jim Fiji, and the Eskimo Emiu, commonly called "Split-the-Wind," were ranked as sailors. Before my purchase of the *Polar Bear* I had engaged Noice and Emiu for the purposes of sledge travel. Levi was to be transferred from the Kellett base to be steward of the *Bear* while Lorne Knight, whom I had engaged with the *Polar Bear*, was transferred to shore at Kellett as an assistant to Captain Bernard. There were altogether thirteen Eskimos, counting men, women, and children.

Although he had no official position on the ship, the ranking member of the party and the most important man was Storkerson, whom I took aboard at Kellett with his family. Ole I was unable to indue to stay longer, for he now had sufficient capital to buy a small schooner and start out upon the independent trading operations which he believed were destined to make his fortune. He went out with Captain Lane in the *Gladiator* and I learned later that he eventually purchased that ship. Thus I lost the man who next to Storkerson was the best ice traveler I have ever known.

To maintain the reserve base at Kellett Captain Bernard now had with him, besides Knight, Charles Thomsen with his family, and five Eskimos, two men, two women, and a girl of about ten years.

In Midwinter Annie Thomsen Played Outdoors All Day.

Guninana and Uttaktuak (Mrs. Lopez).

Andrè Norem

# CHAPTER XL

## ICE NAVIGATION AND WINTER QUARTERS

WITH the northwest wind blowing there was occasion for hurry but we could not get away from the Kellett base before the evening of September 3rd. Then we steamed about ten miles west to the Cape proper and on rounding it found that the ice was just beginning to come in to the land. The nights were growing dark and we decided to wait for the morning in the shelter of the Cape before deciding whether to try forcing our way up along the west coast. The next morning the ice was massed so heavily against the land that there was no hope of penetrating it. Offshore it was more scattered to the west and we steamed about ten miles beyond the Cape, but the moment we tried to turn northward we found everything solid.

The only chance of getting north now appeared to be to turn east and try to reach Melville Island by means of Prince of Wales Straits. This had been attempted vainly both by McClure and Collinson in 1850 and 1851, but they had sailing ships, and with our advantage of power we might be able to do better. Furthermore, there is always the element of chance, and we were as likely to find a better season than they did as we were to find a worse one.

We made great speed towards Nelson Head with a favoring wind. Cape Lambton was passed about 7 P. M. and Nelson Head a little later. On rounding Cape Lambton we noted that the compass was unreliable. There seems to be a local magnetic pole somewhere in that vicinity, a thing which ships will in future do well to remember, for the water is so deep up to the sheer cliffs that in foggy weather one might sail right into them unwarned by the sounding lead upon which whalers rely in thick weather to signify the approach of land. The lead is a reliable guide on most parts of the mainland coast where the water shallows towards shore at the rate of only a fathom or two per mile, but it becomes a frail reed to lean upon in such places as this.

About 9 o'clock the morning of the 4th we entered Prince of

Wales Straits proper, and almost immediately came in touch with densely packed bay ice. But as the wind was from the Victoria Island side we were able to make northing by following the Victoria Island coast through the lane between the land and the ice kept open by the offshore breeze.

Beyond Deans Dundas Bay the wind suddenly shifted and began to blow from Banks Island, bringing heavy ice rapidly down upon us. This looked serious, for there was no shelter and the ship was heavily loaded. In chartering the *Polar Bear* it had been agreed that Captain Lane should leave his own cargo in the bottom of the ship and that our goods should be taken in on top. Through the circumstances of having to pack things as rapidly as we could get them from the *Ruby*, it happened that, although some of our most valuable possessions were deep in the ship, many articles of the greatest importance were on the deck. When I purchased the *Bear* I would have given a great deal to have her free from Captain Lane's goods which, although of some commercial value, were only a handicap to us, as, for instance, several tons of canned fruits, vegetables and meats. Now when we saw the ice coming down I called both Gonzales and Seymour in consultation and asked whether it was practicable to get at and to throw away these canned goods. I thought it possible that in loading they might have kept a shaft open so that some of the material underneath might be accessible. Both officers agreed that the ship was a foot or eighteen inches deeper in the water than she ought to be for fighting ice, but that the canned goods and other worthless stuff were inaccessible. Had we lightened the ship it would have had to be by throwing away the deck cargo which consisted of the things we most needed, such as fuel oil for the engines, kerosene for lamps in winter quarters, and coal for fuel. The need for coal arose through the disadvantage of having a large crew composed of sailors who, never having tried it, were unwilling to live in snow-houses and must have a large frame house or something of the sort with a kitchen, a house so appointed that they could be fed and lodged in the style they were used to.

Upon the strong advice of both officers, I decided to put the ship as near the beach as possible and to unload enough cargo to lighten her a foot. We could then steam out in the ice in proper trim for dealing with it and try to come back later to pick up what we had unloaded.

The unloading was rather easily done for the deck cargo consisted largely of gasoline in 100-gallon metal drums. We just threw them overboard and the northwest wind drifted them ashore, for the oil is so much lighter than sea water that, although encased in iron containers, it did not sink. In addition we unloaded several tons of coal and three or four tons of pemmican. We had the unloading done just in time to heave anchor and meet the incoming ice about a quarter of a mile from the land, and were able to work our way out into it about half a mile, where we tied the ship to an exceptionally heavy floe. Within a few minutes thereafter the ice was tightly pressed on all sides of us and the ship began to creak with the strain. Eventually she rose slightly through some of the ice getting underneath her and in that condition she was when I went to sleep.

When I turned in in the evening we were two or three miles south of where our goods had been landed but when I awoke next morning we were a mile and a half north of the depot, for the current in the straits had changed and the ice had milled around until our cake was almost against the land. It drew enough water to ground before the ship did and she was well protected behind it.

For several days the ice conditions continued so bad that there was no hope of advancing and by that time we agreed the season was too late for attempting to cross to Melville Sound. Deceived by the charts, we supposed that there was no harbor to the north of us in Prince of Wales Straits on either shore. An excellent harbor which we discovered later and named Knight Harbor after E. Lorne Knight of our expedition is at the very northeast corner of Banks Island, and this would have made a comparatively advantageous wintering place easily reached. Not knowing it existed, we determined to winter where we were.

I should, of course, have liked to get the ship to Melville Island, but her outfit was adequate for two years so that wintering here did not greatly worry me. I saw useful work ahead that could be advantageously done from this base, and trusted that next year with the full season at our command and with the ship in proper trim we should be able to get her to Melville Island at least, if not farther north. On deciding to make this location our winter quarters, I entered in my diary the following reasons why I considered the place not a bad one:

(1) The only good sledge maker in our expedition was Captain Bernard at Cape Kellett. We had left with him what material for sledge making we had been able to get at Herschel Island, and it had been my intention, however far north the *Polar Bear* was able to go, to make a trip back to Kellett during the winter

to get these sleds. This could be done conveniently by crossing Banks Island from where we now were.

(2) Wintering on Victoria Island was advantageous in that I desired to study further the so-called "blond Eskimos" of Prince Albert Sound whom I had visited in the spring of 1911 without opportunity at that time for a stay of more than two or three days. I was anxious not only to study the language and customs of these people in their homes but also to purchase as large an ethnographical collection as possible to illustrate their manner of life. To do this now was important, for the Hudson's Bay Company and other traders were laying their plans for commercial development, and the Church of England already had a party of missionaries under way. Under the influence of these agencies the manner of life of the people would be sure to undergo a rapid change and whatever information or specimens we could not secure now would be in large part permanently lost.

(3) We had been unable to get nautical almanacs or scientific instruments at Herschel Island, and one of the arguments for not straining ahead was that from this base I might be able to make a trip in the winter to the *Alaska* to secure them.

(4) Victoria Island, which had been discovered by Franklin and Richardson in 1826, had been further explored by various British expeditions but the east and north coasts remained unmapped. In 1905 Lieutenant Godfred Hansen, of Amundsen's expedition which was then wintering at King William Island, had made an attempt to finish the coastline but had been able to do only about half of it. This would be a favorable base for us to finish the work.

(5) Lastly, with the ship safe and with an outfit for two years, we had another year to look forward to, which was an argument for not taking undue risks this season.

Activities of four kinds were now set in operation. First, parties were sent up and down the coast to scour it for driftwood. Booty in that line turned out to be small, for the average amount of driftwood on the coast was probably less than half a cord per mile and much of that was wet and decayed.

Second, there was the hunting. This was undertaken by myself with the Eskimos, Pikalu, Illun and Palaiyak.*

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* Palaiyak, then as a boy half grown, had been with me through about half of my 1908-1912 expedition, and Pikalu had been with me off and on during the same period. For frequent references to them, see "My Life With the Eskimo." Palaiyak's photograph appears in that book opposite page 268.

The first day Palaiyak came upon seven bulls of which he killed six. Thereafter we got a few stragglers but in general the season was too late for getting caribou in this particular part of Victoria Island. It had been believed previously that no caribou winter in the island at all and the Eskimos of Coronation Gulf gave me direct testimony to that effect in 1911. We proved this winter, as I had suspected, that this idea is based on mere lack of information. The Eskimos are out on the sea ice all the winter where they have no opportunity for observing conditions inland. And besides, many caribou do leave the island most falls if not every fall, going south to the mainland. We found in the winter of 1915-1916 that the Eskimos of Minto Inlet were aware of the presence of caribou on the land although they made no attempt to hunt them, living entirely on seals and polar bears.

The country inland from our winter base near Armstrong Point is one of the rockiest sections in which I have hunted in the North. There are not many spectacular outcrops to give the casual observer the feeling of it, but when you walk over the hills you find that the surface is finely splintered rock which wears out in three or four days a pair of boot soles that would have lasted as many months in ordinary arctic country. A corollary of this rockiness of the hills is that vegetation is comparatively sparse and confined largely to the lowland. This lowland naturally gets deeply covered with snow that is blown off the bare hills, making the country ill suited to caribou in winter which doubtless is the main reason for their absence. Evidently they are numerous in summer, as we could judge by *inuksuit* of the previous year, which showed that both Eskimos and caribou had been here in considerable numbers.

Inuksuit, or "likenesses of men" are used in caribou hunting by most or all Eskimos who hunt with bow and arrow. When a band of caribou is seen grazing quietly a council of all present is held and an ambush determined upon towards which the caribou shall be driven. This ambush is made at the angle of two long lines of monuments, the monuments being set up from fifty to a hundred and fifty yards apart, according to the character of the topography. In rocky country these are made by putting two or three stones one on top of the other to a height of one or two feet. If the herd is large and the drive is looked upon as important the two lines of monuments may be run out each a distance of five or six or even ten miles, although lines of two or three miles are more common. The angle between them may be anything from fifteen to forty-five degrees.

At intervals of perhaps half a mile men, women, or even children of six or seven years are stationed and there must be at least one person at each extreme of the lines. The hunters with bows and arrows lie in ambush at the angle of the "V" while the rest of the men and women form a crescent curve beyond the caribou so as to drive them towards the ambush. In my experience the driving is started by the men giving long howls in imitation of wolves. This generally makes the caribou restless and starts them moving slowly and uncertainly away from the direction from which the howls come. Sometimes, instead of the imitation wolf-howling, dogs which are held in leash are induced to bark. It may happen either deliberately or through accident that the caribou get the wind of these drivers, which usually has the same effect of starting them to leeward. The drivers gradually close in and the caribou enter the V-shaped area.

Presently they see one of the people who stand in the line of monuments. Apparently they recognize these as human beings and dangerous enemies, or possibly they take them for wolves. Anyway, when they are once scared and get the idea that there are people or wolves in this line, their imagination appears to turn all the little monuments into a line of people. Hence the Eskimo name *inuksuk*, "likeness of a man"; *inuksuit* is the plural form. It seems absurd that two stones, one on top of the other, reaching an elevation of only a foot, should be feared as much by the caribou as actual persons but that appears to be the fact. It seldom happens that the animals break through the line and usually they are driven at a speed of from five to eight miles per hour towards the ambush where several of them are shot. It is here, when the people who have been standing at the sides close in on them from behind and when the caribou get frantically frightened, that some may break through and escape.

The only person who kept a record of caribou killed by various members of the expedition that winter on Victoria Island was the steward, Levi, and his record seems to have been lost, but my impression is that we got between twenty-five and forty. In addition we got a great many seals, and a few polar bears. On September 23rd, for instance, Illun secured five seals and I six, giving us on that day a ton of meat and fat.

The third line of camp activity was unloading the ship and house-building. This naturally occupied most of the men. Hadley was architect and chief carpenter. There was lumber for a house and glass for windows.

This is an appropriate place for certain suggestions as to the building of houses in the North. To most white men it seems improper that the walls of a house should be anything but vertical, but to the Eskimos it seems proper and to me it appears sensible that instead of being vertical they should lean inward slightly. When a wall of boards is vertical it takes great skill even with the best of prairie sod to build a sod wall outside that shall not eventually lean away from the house enough to make an air space, thereby destroying a great part of the protective value of the sod wall. But if the board wall slopes inward five or ten degrees from the vertical, any one can place sod so that it will hug the wall, eliminating the air space. Gravity takes care of that.

Another idea of value in arctic house-building is to have the door low. We have outlined the principle in describing snowhouse building which applies in any house, that hot air is light and wants to rise while cold air is heavy and inclined to sink down. If in a cold climate a house has its door in the floor, the laws of gases and of gravity will take care that the cold air does not get into the house from below any faster than the warm air escapes at the top. This is the same principle applied in ballooning, where the bag is filled with gas lighter than air and the mouth of the bag turned down and left open without fear of the hydrogen escaping rapidly. If, on the other hand, the door is high, as in most dwellings in civilized countries, when the door is opened there is an inrush of cold air along the floor through the lower half of the doorway and an outrush of warm air through the upper half. In an exceedingly cold climate, such as the Arctic, where the temperature outdoors may be fifty below while the air inside has been heated to seventy or eighty degrees above, a great quantity of heated air will escape even with the most hasty opening and closing of the door, and much fuel is thus wasted. It cannot be supposed that getting the cold air into the house that way is advantageous for reasons of ventilation, because entirely other means must be used for controlling the supply of fresh air. We have always a chimney through which warm air escapes and in all except snowhouses some means other than the door for the gradual entrance of cold fresh air.

But I must say that the discussion of a low door in a big frame house to be occupied by sailors is purely academic. You would have far more trouble in teaching your sailors the advantage of going in and out through such a door than you would in supplying fuel to counteract the greatest possible escape of heat, for in my experience sailors are of all men the most conservative.

The fourth and most interesting thing we had to do was to survey the northeast coast of Victoria Island, and it was Storkerson's assignment from the time of landing to get everything ready so that he could set out as soon as the young ice formed along the coast.

# CHAPTER XLI

## AUTUMN IN VICTORIA ISLAND

BY September 21st Hadley had the house finished and every one moved in. Of the two house-building ideas mentioned above, the inward sloping walls and the door in the floor, we had not attempted the low door and the inward slant of the walls had been used with the sides of the houses only and not the ends. This was of little consequence for no sod was obtainable and the walls had to be banked with snow. We found during the winter that enough heat escaped through the boards by conduction to melt a big air space between the snow banking and the board wall, nearly destroying the value of the banking and making this one of the coldest and most disagreeable houses that any of us ever occupied. The condensation of moisture on the inside was so great that streams ran down the walls, masses of ice formed behind the bunks and on the floor, and everything became wet.

In part this was due to an excessive desire to be clean. So far as I know, few if any polar expeditions before ours have maintained a liberal supply of water for washing and bathing at base camps situated where no appreciable amount of fuel could be secured locally. But we were a very cleanly people, especially the recently civilized Eskimos, with whom it is practically a matter of religion to take a bath once a week. Next to Eskimos sailors are in my experience the most insistent on bathing, for with them as with the Eskimos it has a certain amount of semi-religious significance—washing and bathing is in part a ceremony. We had only a limited amount of coal and we could furnish Levi with no more than one-twenty-fourth of it per month, for we meant it to last for at least two years. Had this coal been used only for cooking and then burned to make a dry heat for the house, everything could have been kept fairly dry. But such a large amount of ice had to be melted for washing that there was a vessel of ice on the stove nearly all the time, taking up a large part of the heat, and what heat there was consisted chiefly of steam from the cooking. Levi told me that some of the Eskimo women used to wash their hands as often as ten times per day, but it seemed to us that attempting to restrict this was rather more disagreeable than enduring the damp. Personally I never interfered at all, for had the majority preferred a dry house with dry heat to a dripping house filled with steam, this end could easily have been attained. But the damp discomfort of the base camp furnished me another argument for keeping to the dry and comfortable snowhouse camps we use when traveling and hunting. Except the winter 1911-12 when I was devoting myself to Eskimo linguistics exclusively, I have on none of my expeditions spent more than the least possible time at winter base camps.

By September 21st the young ice had become fairly strong along the near-by land and Storkerson with a party of three set out, intending to make a depot on the northwest corner of Victoria Island, Peel Point. He returned next day, reporting that the strong ice extended only about eight miles north of the camp and that he had been unable to proceed farther. The reason for wanting a depot at Peel Point was that Storkerson was going to attempt his surveying expedition during the period of little daylight, returning long after the sun had ceased to rise at noon. This is the one time of year when it is not reasonable to hope that an extensive journey can be supported through hunting. The animals are there, but they are hard to find in the dark.

Just at this time I suffered a slight injury through an accident with defective ammunition. On my expedition of 1908-12 I used the Austrian 6.5 mm. Mannlicher-Schoenauer rifle and found it most satisfactory. The advertised muzzle velocity was 2,560 feet. For the present expedition I was using the Mannlicher-Schoenauer as remodeled by Gibbs of Bristol, said to have a muzzle velocity of 3,160 feet, attained through a considerable increase of the powder charge. I found the Gibbs modification excellent, if the blame for the sort of accident which happened to me September 22nd is put upon the ammunition rather than the rifle.

This day I was sealing and had already killed and secured six seals. When the seventh appeared in the water a hundred yards away I fired but never knew whether I hit him, for as I fired I saw a flash of light and for several days thereafter saw very little more with my right eye. The shell had cracked from the primer out to the edge and about a quarter of an inch up the side. It seems unbelievable in examining the Mannlicher-Schoenauer that powder could come back through the bolt, but it did. The black spots made by it were on my nose and cheek and forehead. They were so conspicuous and hurt so much that I can only explain the slight injury to the eye itself by supposing that it was partly closed and protected. It was about a week before the inflammation disappeared.

Accidents of this sort occurred with our rifles about twice per thousand rounds of ammunition. I had two similar experiences in later years but in neither case did so much powder come through, and there was no real injury except on this occasion. Storkerson had one or two accidents of the same sort but his eye was not hurt. It seems possible, therefore, that the rifle which I had at the time of the first accident was in some respects slightly different from the others. We had about half a dozen of these rifles and as I made no record of which one I was using at the time, I cannot say whether a second shell ever cracked in the same rifle.

During the very busy time of the early autumn while we were making things snug for winter, all hands used to work every day including Sundays except the Eskimos. Of these Palaiyak, who had been with me on a previous expedition and with white men a good deal at Herschel Island, and Emiu, who had spent two years in Seattle and a good part of the rest of his life in Nome, Alaska, were the only ones who were willing to work with the white men on Sunday.* The rest, after religious services, spent their time mainly in card playing and in listening to the phonograph.

By September 25th we had much cold weather and the ice was firm in the straits outside. Accordingly, Storkerson made his second attempt to reach Peel Point. This time he got within sight of it but could not round it nor proceed beyond, for everything in Melville Sound was open. He climbed to the top of a hill several hundred feet high near Peel Point and made sure that no ice was in sight for at least fifteen miles from land. It appeared to him from the position of the old ice which filled the straits only up to a point eight miles north of where the *Polar Bear* was wintering, that had we been able to make with the ship those eight miles before the ice crowded down upon us, we should probably have been able to get across to Melville Island.

The surface of the land near Peel Point was of just such broken rock as in the vicinity of our camp. Trying to cross such land with sledges in the fall is hopeless, for the steel shoeing would be worn away in two or three days—you might as well drag iron over a paving of grindstones as over these hills. There was nothing for Storkerson to do but to make a depot of what he had with him and return to camp. He was back on October 1st and made his third and successful start on the 10th. The party consisted of four men, Storkerson and Herman Kilian to go the entire way, and Noice and Charlie Anderson as a support party.

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* For Eskimo ideas of Sunday observance see Chapter XXVII, "My Life With the Eskimo," under heading, "On the Conversion of the Heathen."

Before his start Storkerson arranged for taking tide observations in the straits. It was too early in the season for a snowhouse, so he pitched a double tent twenty or thirty yards from shore. The rise and fall of the water was observed on a long staff, graduated into inches, and driven like a post into the bottom and stuck through a hole in the ice. The hole was kept open through the warmth of the tent where a kerosene blue-flame stove was kept continually going, but when necessary water was heated and poured boiling into the hole. As the rise and fall was only a few inches between high and low tide, we recorded it in quarter inch intervals and by observations taken ten minutes apart. This series of observations extended through one month.

September 27th I made up a party to go south along the coast. We wanted first to establish a hunting camp where the conditions for sealing were more favorable than near the ship and next we were anxious to get in touch with the Minto Inlet Eskimos as soon as possible for purposes of study and to make purchases for our ethnological collection. The party consisted of Illun with his wife Kutok, Pikalu and his wife Pusimmik, Emiu, Palaiyak and myself.

Our progress southward was slow, for the ice along the beach was very rough and the land so rocky that we could not sledge over it. Farther out in the strait the young ice was still so weak that travel was unsafe. We stopped now and then for seals and killed a number, two or three times sending loads of them back to the ship. Our impression was, however, that in none of these localities would the sealing remain good when the frost hardened, so we kept moving along. Eventually we established a temporary sealing camp just north of Deans Dundas Bay. We realized that this also would become a poor locality as soon as the straits froze over more firmly and that the permanent camp would have to be much farther south where the currents keep the offshore ice in motion.

I might here explain any apparent inconsistency between my statements to the effect that I consider experienced white men better traveling companions than Eskimos, and that on my journeys I nearly always preferred Eskimo companions. The reason is that I am an ethnologist by profession, and even apart from that intensely interested in all the information that I can continually get from the natives. I have never acquired perfect command of an Eskimo dialect, although I speak the Mackenzie River one about as fluently as I do English, which is my native tongue. Fluency does not necessarily mean idiomatic correctness, and when talking with members of this group I am continually discovering mistakes which it is well for me to correct. When there are Eskimos of other dialects I make notes illustrating not only the idiomatic differences but especially the sound changes. A simple illustration is that the ending "yok" in the Mackenzie River dialect becomes "rok" in several but not all the dialects of northern Alaska.

A continual marvel to me is the endless variety of Eskimo beliefs, called by us superstitions. With the most superstitious persons of our own race we usually soon come to an end of the list. They may have beliefs about the moon controlling the weather, about the unluckiness of Friday and thirteen, about picking up a pin, about the lighting of three cigarettes with one match, etc., but I have never known any one with whom the list of such beliefs would not be ended inside of a score or two. With the Eskimos there seems to be literally no end. Their range of information about the facts of nature is limited and their information about the non-facts correspondingly voluminous.

Not as an exhaustive account of Eskimo beliefs but merely as an illustration of what one may learn in a week's journey with Eskimos whose confidence you have, I give a synopsis of diary entries on this subject between October 2nd and October 15th. I was happy that I was able to learn anything at all, for to me it is a deplorable result of the Christianizing of the Eskimos that most of those in the vicinity of the Mackenzie delta are now unwilling to tell any ordinary person about the more interesting of their old beliefs. They still hold these firmly but they hold them in secret, talking about them in the Eskimo language when the white men present are known not to understand what they are saying, and with me, since I am known to understand, most of them are now unwilling to talk at all. On this trip I was able to get the full confidence of Illun although his wife objected strongly to his telling the more sacred beliefs, for they have divided them according to the ideas of missionary approval and disapproval into two classes—harmless and harmful.

I shall give first some of the harmless ones.

On October 2nd I learned from Illun, corroborated by Kutok, that the reason sleeping people can see things at a distance is that when one dreams the eyes travel. If you remember on waking that you have dreamed about things at a great distance it is because your eyes have actually been there while you were asleep. In this connection I asked whether the fact that we dream about hearing things did not imply that the ears traveled also. They both agreed that seemed reasonable but that they had never heard it so stated; privately they considered that in all probability the ears as well as the eyes travel. Still, that would not be the outer ear, for they had frequently observed that those remain while persons are asleep. When I pointed out that some sleepers have their eyes partly open with the eyeballs visible, they asserted that such people would not be dreaming at the time. In general they admitted when I cross-questioned them that their belief about the eyes traveling presented difficulties. For instance, you could press on the eyelids and assure yourself that the eyeball was underneath. They said, however, that it was generally true about many things known to be so that there were other things which appeared to be contrary. Nothing which they had ever observed had shaken their belief that in dreams the eyes do travel.

On October 15th I learned from Kutok that women who have children as often as one every other year lose their hair rapidly. As the beliefs of whites here correspond, it seems the Eskimos have here observed correctly. Kutok said Eskimos consider that childless women and those who have few children have better hair than those who have many children. It is of course a fact that there are few Eskimo women who have many children. Kutok's own mother had had more children than any other women known to any of my informants, and they numbered eleven. Four children is considered a large family among any Eskimos known to me.

It is not unreasonable to suppose that the falling out of hair may have something to do with the condition of general health. I can say from my own experience that my general health appears to be much better when I am in the North than it is in civilization, and that the condition of the hair corresponds. My hair commenced falling out when I was in college and continued until it had become noticeably thinner up to the point of my first going North when I was twenty-seven. Four or five months after I commenced the journey I noticed that my hair had ceased falling out and it did not begin again until four or five months after I returned to New York in 1907. In 1908 I left New York in May, reaching the Arctic in late June, and I think it was in September or October that I noticed my hair had stopped falling. It did not fall from that time until about Christmas in 1912, three months after I got back to civilization but five or six months after I had begun to eat the ordinary mixed civilized diet and live in general in the ordinary civilized way. On the present expedition my hair stopped falling out sometime during the winter of 1913-14 and did not begin again until I was convalescent from typhoid at Herschel Island in the winter of 1917-18. So far as I can judge I have a better head of hair now, fifteen years after, than I had when I first went North in 1906.

It seems not unlikely that the interference with circulation caused by a tight hatband, as is generally believed in civilization, has something to do with the falling out of the hair. In the North I never wear a hat and I cease wearing one as soon as I reach any place where going bareheaded does not expose one to annoying attention or comment. Even in the coldest weather of winter I frequently throw back the hood of my coat, wearing it so that it corresponds to a collar rather than a cap, and on very mild days I go entirely bareheaded, finding that the hair is sufficient protection for everything but the ears. I never wear a cap of any sort underneath the Eskimo-style hood although that is the custom in the semi-civilized portions of Alaska, such as the vicinity of Nome, where white men have universally adopted modified Eskimo clothing.

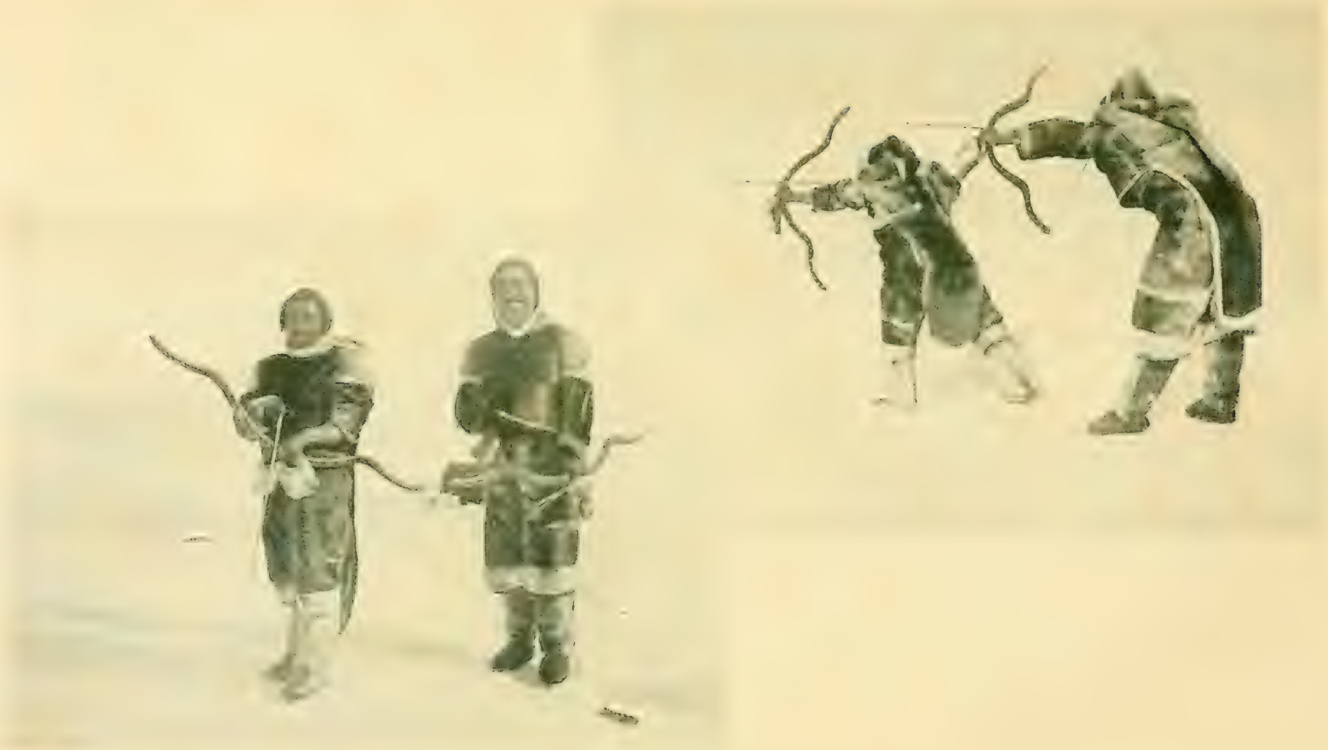
Another explanation that suggests itself and is in line with the modern vitamine theories is that the high percentage of underdone and raw flesh foods eaten by us in the North may have something to do with stopping the falling out of hair. I have noticed in my own case that tooth decay which had begun before I went North has advanced less rapidly up there than it does in civilization. This may be due to a difference in the composition of the saliva and the different chemical condition of the mouth through the absence of any decaying carbohydrates. But it has been shown that a diet deficient in vitamines will cause rapid tooth decay in guinea pigs. It seems not unreasonable even to suppose that the high percentage of vitamines or some similar factor in the northern diet may be the explanation perhaps of both the slow decay of teeth and the improved condition of the scalp.

On October 15th I secured from Illun against the rather insistent opposition of his wife a valuable bit of the sort of secret information which is now carefully hidden by most Eskimos from missionaries or other white men, and which in the minds of the Eskimos is gradually taking on the character of our old beliefs in witchcraft.

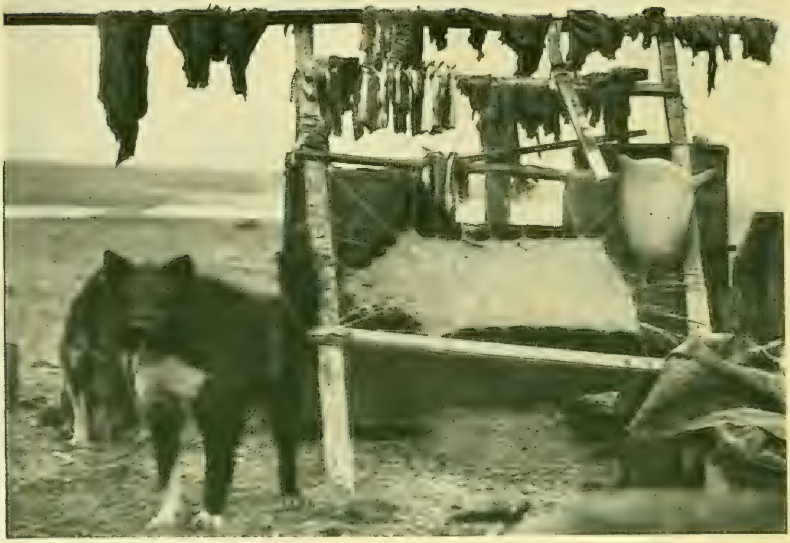
That these things are frowned on by missionaries has gradually brought about the Eskimo belief that, while they are true and efficacious, the ancient charms are wicked. Some Eskimos seem to think that the mere knowledge of them is wicked and likely to endanger salvation. Others consider that knowing the charms is not wicked if you never say them. Accordingly, some Eskimos who have full confidence in me will tell me that they know some charms but are afraid to tell them to me, while others will assert that they know no charms. They admit that they knew them once but claim to have forgotten them.

Illun's powerful charm consisted of the same word repeated three times and three other words each pronounced once. One of the words had a meaning unknown to him, a point not uncommon in the ancient charms which in some cases are in their entirety composed of words either partly intelligible or not understood at all by the people of the present day. This charm was to be pronounced in a low singsong that could scarcely be called a chant. It was to be used only in cases of extremely difficult childbirth. One should wait until in his opinion the woman was about to die. The possessor of the charm would then go outside the house. He was to walk around the house once in the same direction that the sun moves around the horizon. The charm should then be pronounced distinctly and but once, and must be finished just before one reaches the door at the end of the walk. The child may be delivered during the middle of the chant, or in a very difficult case not until the last word is being pronounced. I rather inadvertently asked Illun whether the charm was to be repeated a second time if it did not work the first time. At this he was naturally offended, saying to me with dignity that he had already said that the child was delivered during the pronouncing of the very last word; consequently one need not worry about the necessity for repetition. He warned me that if I ever had occasion to use the charm I must for a time not eat any of the native fats, caribou, mountain sheep, polar bear, seal, marmot, and the like. He said that eating butter or bacon would do no harm.

Both Kutok and Pusimmik had said when Illun began to teach me the charm that they did not want to possess it. By the time I had learned to repeat it correctly I felt quite sure that both of the women must have learned it also, and I asked how they were going to avoid the spiritual guilt of knowledge. I was now told that the trouble in their opinion—they admitted that other Eskimos might have different views—was not with the actual knowledge



Copper Eskimo Bowmen.



Drying Meat and Sealskins.

Eskimo Child Asleep in the Sun.

of these words but with the "possession" of them. Illun explained that he had not yet given me possession of the charm although I already knew it, but said that he would do so now. We then went outdoors and to such a distance from the house that words spoken in an ordinary tone could not have reached the ears of any one listening. Illun planted a small stick in the snow and asked me to stand motionless and keep my eyes fixed on the stick. He then went to one side mumbling some words which I could not catch. In a minute or so he told me that now he had transferred the charm to the stick and if I would go and pick up the stick the charm would be transferred from the stick to me. After picking it up I was allowed to throw it away immediately, for the transfer had been completed.

Afterwards Illun cautioned me very solemnly about the use of the charm. It must be employed only if death seemed imminent. Every word must be pronounced exactly right. Here I asked about my accent. He said that that did not matter, for my accent did not differ more from his than the accent of one tribe differed from that of another, and he knew that this charm was in use by people belonging to various groups. But no syllable must be omitted and the words must not be pronounced in incorrect sequence.

He gave further directions that he had not previously explained. The woman to be benefited must be by herself in a hut that had been specially constructed for her. At the commencement of the charm you must be standing at the right side of the door from the point of view of the woman if she were looking out from the house. You must begin saying the first word as you lift your foot for the first step, and should finish the last word exactly as you arrive back at the left side of the door. He emphasized that if anything was done incorrectly I should suffer some serious misfortune and should probably die within the year. I asked if the woman or child would suffer through an incorrect performance, but he said they would not except to the extent that the charm would not help them.

In connection with this charm Illun told me that his father had possessed a man-killing spell (*inuksiun*). He had been a man of very even temper and had never had occasion to use it. Illun himself was quick-tempered, and when his father offered to teach him the charm he refused on the ground that it might be too great a temptation sometime if he were angry, leading him to commit murder. Illun further said that before he became a Christian he had controlled several wicked charms but had "thrown them away" and completely forgotten them. The one he taught me he did not consider wicked because its only purpose was to do good and that only to others. He said he had had some charms for curing himself of illness, but had discarded these because they were selfish and he had been taught by the missionaries not to be selfish.

On October 6th Illun gave me a bit of information that has since been confirmed, at least in part. He said that the inland people of Alaska, such as the groups Noatagmiut, Kagmallirmiut, Killirmiut, used to lose their teeth while still not old through their loosening and dropping out. The coast people, he said, seldom lost teeth this way, but theirs were frequently worn down to the gum through the eating of dried fish or dried meat into which the wind had blown grains of sand. One of my earliest observations when I came to the Eskimos was that those who were not eating civilized food to any extent invariably had undecayed teeth, although they were sometimes badly worn down through chewing food containing sand. At the end of my second expedition I brought back to the American Museum of Natural History one hundred and six Eskimo skulls. Not one tooth has so far been noticed in any of these skulls that shows evidence of decay (dental caries) except those where the decay followed a breaking of the tooth through accident. But in confirmation of what Illun now told me and of what I have also observed, ten or fifteen per cent of these skulls give seeming evidence of pyorrhea, a disease which frequently leads to the dropping out of the teeth. That pyorrhea was absent on the coast I have not been able to confirm and it may be that Illun's information was wrong on this point.

It may seem that with a person like Illun, who in that respect is a typical Eskimo, it would be impossible to distinguish between truth and untruth where he gives you myth and miracle with as much confidence as the narrative of the simplest averred fact. But one who knows the Eskimo mode of thought has little difficulty. Illun has told me that when a polar bear kills a seal he takes hold of the skin of the seal at the mouth and, as mentioned already, strips it off as one may remove a stocking by turning it inside out. He has also told me that he never knew a polar bear to eat a fish or to try to catch one, and that he has known of bears walking to the leeward of a pile of dried meat without paying any attention to the smell and evidently failing to realize from the odor that dried meat is food. The first of these stories has no foundation whatever and the others are literally fact. The distinction is simple. I must admit, however, that some stories are of such a nature that it is not easy to discriminate between fact and folklore. For instance, I was told once about a man who dropped his hunting knife through a hole in the ice where he was fishing and who pronounced a charm and then rolled up his sleeve and reached down and picked the knife off the bottom. When I heard the story I imagined that the charm had been wholly unnecessary and that the water simply had not been deeper than twelve or fifteen inches. I learned later, however, that this incident occurred on the ice of Dolphin and Union Straits where the water is probably thirty fathoms deep. In other words, what I first took for a simple fact would have had to be a miracle.

This information was obtained from Illun between October 2nd and 15th. It will give some idea of the general character of my diaries to say that the total number of pages covering these days is ten and that about five are devoted to fact, myth, and miracle as told me by the various Eskimos. If all my diaries for the time I have spent in the Arctic were examined, I think that, ice journeys apart, the number of pages devoted to information secured from the Eskimos is somewhat greater than fifty per cent. It is the advantage of our comfortable winter camps, as I have said, that even in January with the temperature outside perhaps fifty below zero we can sit comfortably in our most casual traveling camps, writing down information with a fountain pen. Were we as uncomfortable as polar explorers have usually been we should have neither the inclination to listen to such yarns nor the facilities for recording them if we did.

The first aurora of the year appeared on this journey on October 8th. While auroras are commonest in midwinter they are frequently seen earlier in the season than this, and I have once seen an aurora in summer when the sun was just beneath the horizon in the north and there was daylight enough at midnight for the reading of ordinary print. These are beautiful and wonderful phenomena but so are sunsets. Both have been frequently described in print and the auroras have been especially dwelt on by nearly every polar explorer. Had I some new and plausible explanation to offer for the aurora it would be forthcoming, but for word pictures I refer the reader to almost any polar book in a circulating library. Words must always be inadequate to describe such phenomena to those who have not seen them, but sketches and painting are better. I know none so good as those published by Anthony Fiala in the scientific results of the Fiala-Ziegler Expedition.

## CHAPTER XLII

### A VISIT TO THE COPPER ESKIMOS

OCTOBER 19th we left the others behind at the temporary hunting camp just north of Deans Dundas Bay while Emiu, Palaiyak and I went farther south in search of Eskimos. On our way along the coast we saw frequent traces of Eskimos who had been there in summer, either inuksuit or wood shavings where they had been fashioning their implements from driftwood. There were no recent signs of caribou but a few bear tracks, and according to expectations the sealing conditions improved. The map in this vicinity needs correcting but on this journey we had not the facilities for doing it and we never thereafter had the time. It is possible, however, to identify from the map the conspicuous points.

As we advanced I commonly walked along the beach sticking up on end any little piece of driftwood for use as fuel on later journeys during the winter. Some of the wood was doubtless hidden by snow. What I saw amounted to less than a quarter of a cord per mile of beach. We found bones of whales here and there, in some cases bowhead bones but more often those of the *ingutok*. One of the unsettled points about whales is whether the animal known to the Eskimos as ingutok is a distinct animal or a young bowhead. The Eskimos say that the meat is different in texture and flavor. This I can verify though I cannot say that this difference may not be due to age. The amount of whalebone is very small with the ingutok but this again might result from youthfulness. Of the whaling captains I have talked with, most are of the opinion that it is another species of whale. They say they have killed bowheads of size corresponding to the ingutok and, beyond the proportions of the body, quite different.

At Phayre Point we stopped October 24th for seals, but the current proved so strong that they would have drifted beyond our reach before we could secure them with the manak. Had we had with us a tarpaulin to convert our sledge into a boat we could have killed almost any number. The ice in this vicinity was still so thin that bays could not be crossed and we had to follow around fairly close to the land. Off Phayre Point itself the shelf of ice adhering to the land was less than half a mile wide. We saw two caribou near the point but they took fright from the howling of the dogs and we should have had to devote at least half a day to following them. The land, too, was rocky and fetching meat from inland would have been hard on the sledge shoeing.

The next day when traveling east along the south side of the peninsula of which Phayre Point forms the extremity we noticed almost simultaneously a man a mile or two ahead of us and two men a mile or two behind following our trail. The man ahead did not appear to have seen us but the others were evidently trying to catch up, so we stopped and waited for them. They turned out to be two Eskimos whom I had not previously seen but who had spent the summer in Banks Island and had visited Captain Bernard at Cape Kellett. They were able to give us some information from Kellett dating a little later than our departure but it amounted merely to saying that everything was going well.

They told, however, a story that worried me. I have mentioned before in telling how our party traveled homeward across Banks Island in the summer that we met the Eskimo Kullak and his wife Neriyok, and that Kullak presented me with a pair of slippers to see to it that his wife should have easy delivery and that her expected child should be a boy. I was now anxious to hear about them but did not want to inquire for fear my doing so might give the impression that I was over-interested. Presently, however, our visitors mentioned of their own accord that Kullak and his wife were not far behind and that the child had not yet been born. It became instantly clear that no child was involved but some form of abdominal tumor which had given the woman an appearance mistaken by the Eskimos. It seemed to me that such an abscess would certainly lead to death and I feared that I should eventually appear to the Eskimos as a murderer whenever the death should occur. For the time being I was anxious to keep out of their way for I felt sure that if I met them there would be additional importunities that I should do something I was powerless to do.

After stopping an hour or two on the road to chat, we all proceeded to the village which the visitors said was only a mile or two ahead in a deep bight. When we came in sight of it a crowd of about a hundred men, women and children came out to meet us, practically the entire population. Among them I recognized several acquaintances from my short visit to these people the spring of 1911, but several I remembered I did not see. Inquiries brought out the fact that two of those with whom I had particularly associated had died, but that most who were not now here in Minto Inlet were supposed to be in Prince Albert Sound. It seems that about a year ago the group of about two hundred and twenty people found by me in the Sound in 1911 had divided into two nearly equal sections, one remaining in the Sound and the other coming north into Minto Inlet and amalgamating with the twenty or thirty people whom in my previous books I have spoken of as a separate group.* I now learned that from their own point of view they always were the same people and that any one bears the name of Minto Inlet or of Prince Albert Sound according to which of these districts he inhabits any particular year.

Our welcome was as warm and friendly as it could possibly be, and nearly that noisy. Little children jumped up so as to be able to touch our shoulders and men and women stroked and shook and handled us in every friendly way. According to their custom of hospitality, we were asked as to the size of house wanted and whether it was to be built right in the village or some distance outside. We chose a site about a hundred yards away and the house was promptly erected without our touching a hand to anything. Our dogs, however, although perfectly friendly, were so much larger than any the people were used to that we had to unhitch them ourselves and tie them up. Even after realizing the friendliness of the dogs, the Eskimos seemed to stand in a good deal of awe of them and gave them a wide berth, rather, apparently, through respect than fear.

This village was a single row of houses built under a cutbank, probably because this was the only locality where snow deep and hard enough for cutting into blocks could be secured. In the evening when it had become dark the glowing windows had a most cheerful appearance from without. The houses all faced the sea—southwest or west. The windows were set into the dome above the doors and were of translucent lake ice, commonly about eighteen inches square, and those not square had their longer diameter up and down. Some of the houses were single domes but others were constructed by building two or three domes so that they intersected and then cutting out the intervening walls. Whether the house consisted of one, two or three domes, there was usually but one entrance. This was through an alleyway, in some cases six or seven feet high and varying in length from eight to twenty feet. The door at the outer end of the alleyway was four or five feet high and two and a half or three feet wide. But the door by which one entered from the alleyway into the house proper was always so low you had to go in on hands and knees, and the upper edge of the door was a few inches lower than the top of the bed platform when you came in.

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*See "My Life With the Eskimo," pp. 279 ff. and "Anthropological Papers of the Stefansson-Anderson Expedition," pp. 29-30.

The largest of all the houses was that of my old acquaintance Hitkoak, the much-traveled man who had in 1899 seen Hanbury's party on the Arkilinik River above Baker Lake and who told me about it in Prince Albert Sound in May, 1911.* This was far the largest snowhouse I had ever seen. In its longest diameter the floor was thirty feet across. There were two bed platforms each ten or twelve feet across the front and eight feet wide. A sort of impromptu reception for us was held in this house. With the visitors, family and intimate friends sitting Japanese-fashion on the bed platforms, there was room for about seventy-five people to stand closely packed on the floor space in front. It has to be admitted that they were almost as closely crowded as straphangers in an American street car, but even at that it was a marvel to me that a hundred people could gather under one snowhouse roof.

The highest point of the central dome was probably ten or eleven feet from the floor. The house was brilliantly lighted by several oil lamps each burning with a foot of flame. These were set low down in Eskimo fashion but their light was reflected again and again from the million snow crystals in the dome, so that the house was filled with a soft and diffused glow.

A house as large as Hitkoak's is never purely a residence but is intended in part as the assemblyroom or club house of the village. With its high dome it is difficult to heat, for it becomes so warm near the roof that the snow tends to melt before it is comfortably warm at the level where people sit. Moreover, heating so large a house takes a great deal of seal oil. Families of social ambition among the Eskimos would perhaps not mind the mere trouble and expense if large houses were fashionable. This is the opposite of the fact, for the snowhouse dwellers of the east, no less than the dwellers in wooden houses whom we have already discussed, prefer coziness to spaciousness and never seem entirely at home in a house that is larger than necessary. It is a part of their idea of proper housekeeping that all possessions except those in actual use at a given time are to be kept outdoors in some sort of depot, perhaps on a platform or perhaps in a house built for the purpose. People go out and fetch whatever is wanted and take it or the remains of it out as soon as the occasion for use has passed.

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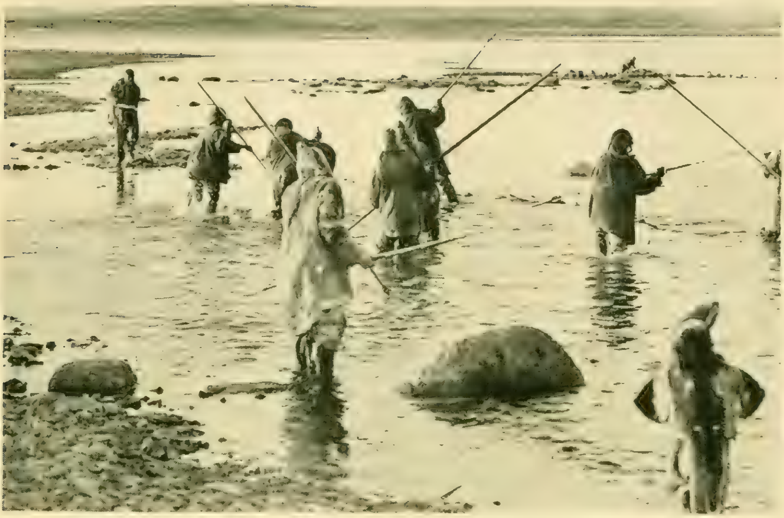
* For a photograph of Hitkoak, see "My Life With the Eskimo," opposite p. 284. For Hitkoak's account of his meeting with Hanbury, see the same book, page 285; and for Hanbury's account of his meeting with the party of which Hitkoak was a member, see David T. Hanbury's "Sport and Travel in the Northland of Canada," p. 14.

The beds in Hitkoak's large house were covered with polar bear and reindeer skins mainly, but there were a few ovibos hides. Some people had told me in 1911 that ovibos were extinct from the part of Victoria Island inhabited by them, but I learned now that a single herd had been discovered two or three years before northeast of Prince Albert Sound and all the animals in it had been killed. As these people cannot count above six, I was unable to learn exactly how many animals there were, but I should judge from the number of skins around this village and from the fact that I was told that some of the skins were in the other division of the tribe, that there must have been fifteen or twenty.

The village had been standing here only a few days. Previously the people had been at some lakes a little distance to the northeast, catching fish of various sorts with hooks through the ice. One type was a salmon-like fish, red, and resembling the king salmon of Alaska. The other was a fish which when we took a specimen home to camp was said by Jones, who was an old salmon fisherman, to be very similar to the steelhead salmon of British Columbia. There was also a fish resembling closely, if not identical with, the lake trout of Great Bear Lake, with flesh slightly pink but with a white skin. We saw specimens of these fish running up to perhaps thirty pounds in weight. In Bear Lake similar fish attain a weight of over forty pounds.

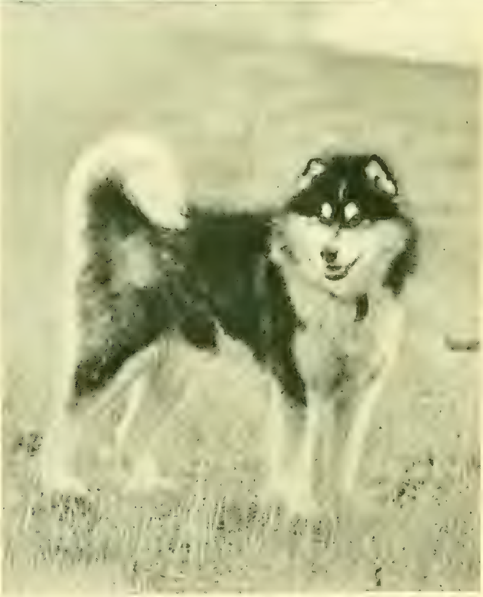
Near these fishing lakes a few caribou had been killed. When we arrived at the village they still had considerable stores of caribou meat and fat with a little dried meat. Kullak and the Banks Island party had been bringing home their sledges loaded with dried goose meat from the moulting geese which they had killed north of Kellett—white or snow geese. Seals were being caught through holes in the ice by the *mauttok* method, and a few bears had been secured.

In the economy of these Eskimos the dog is used primarily for hunting and only secondarily as a draft animal. The seal holes, which are only an inch or so in diameter and through most of the winter covered with snow, cannot be found by the Eskimos without



Copper Eskimos Spearing Fish.

Some of the Trout Are Larger than This.



Trying to Keep Cool on a Hot Arctic Day.
Typical Copper Eskimo Dog.

the help of the sharp-scented dogs. Usually each seal hunter has his own dog which he takes with him in leash but sometimes two or three hunters will use the same dog. They will then leave the house together in the morning, walking back and forth over the ice until the dog has discovered the first seal hole. One of the hunters remains at this hole while the others take the dog farther afield. When he has found the second hole the third man takes him, and so on. When the sealing is not more than a mile or two from the village a seal that is caught early in the day is left lying on the ice while the dog discovers for the hunter a second seal hole. The hunter marks this hole temporarily, then he goes back to where the dead seal lies, hitches the dog to it and sends him home to camp. The dog does this errand with the greatest good will for he knows that he is going to get a feed at the end of it. I have asked Eskimos whether the dog was not likely to stop on the way to eat the seal, but it seems that this rarely or never happens. Before the dog starts he may try to lick the blood off the seal but he will not stop even for this when once on his way. However, if the seal is caught by a snag of ice and the dog gets stuck, he may turn on the seal and eat it. When a dog once learns to eat a seal on the way home it is difficult or impossible to break him of the habit and thereafter such a dog is never entrusted with a seal.

Next to the finding of seal holes the greatest use of the dog is in bear hunting. Commonly two or three Eskimos hunt bears together, although any Eskimo would be ashamed of not tackling a bear alone if no hunting companion happened to be available. It is considered that two or three dogs should be used although some exceptionally good bear dogs are able to hold a bear singly. The bow and arrow are occasionally used, especially if there are several hunters, but more often the bear is killed with the hunting knife converted into a spear, for these Eskimos have no regular spears. An Eskimo always uses a walking stick a little stouter than a broom handle and about four feet long, and when a bear is to be attacked he lashes his hunting knife to this stick, thus converting it into a spear. The knife is double-edged and whether it is of steel or of copper the blade is usually from ten to fourteen inches long.

Used as a draft animal, the dog helps the family to haul the sled. The largest number of dogs I have ever seen among Eskimos who did not have guns is three to a family. Two is the commonest number and one dog to a family is not rare. Perhaps the main reason why the introduction of firearms brings about such destruction of caribou is that the rifle makes it so easy to provide dogs with food, and the mobility of the caribou herds makes it so desirable to have large teams to follow the herds about, that the situation takes the form of an endless chain. A man has more dogs so he can kill more caribou to feed more dogs to help him to kill more caribou. The Eskimos around the Mackenzie River or Cape Bathurst who used to content themselves with two or three dogs to a family before the introduction of firearms, had fifteen or twenty dogs after rifles came and while the caribou were still plentiful. Later, of course, when the caribou had been nearly exterminated in the vicinity the dog teams had to be cut down.

It was a great disappointment to me that Pammiungittok, Hitkoak's father-in-law, the patriarch of the village who had seen Collinson in 1852, had now become decrepit and had apparently lost his memory. In 1911 he told me at length and most interestingly about the visit to Collinson's ship. He made it clear then that while he remembered being on the ship as a boy of five or six, the things he was telling me were not really remembered from that time but rather from the stories which he had absorbed as a boy and young man from the elder people who had been in the same party that visited Collinson. He told me then traditions of the inhabitants of Banks Island and described vividly the discovery and later plundering of McClure's ship in Mercy Bay. He gave me the names of distant people, such for instance as the Turnunirohirmiut, who lived in some island far to the northeast which he had never visited but of which he had heard many stories. At the time I entered this name in my notebook I thought that these would probably turn out to be a mythical people, but I discovered later that Dr. Boas when in Baffin Island in the early 80's learned that people of this name inhabit Prince of Wales Island. Thus was the the old man's general reliability established.*

It had been one of my dreams to spend weeks with this interesting old man, recording the information which I had found by test to be exceptionally reliable as Eskimo stories go. This was now hopeless. All he seemed to remember about Collinson's ship was that he had been on board of it and I could not without prompting get from him even the same stories that he had already told me. I tried to question his sons, Kitirkolak and Alunak, but their information was very vague and much mixed with miracles and obvious untruth, so that what their father had known in the form of stories of historical interest could now be obtained from his sons only in a form to be classed as folklore.

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*See "Anthropological Papers of the Stefansson-Anderson Arctic Expedition," p. 38.

One of the unfounded beliefs about primitive people, at least such primitive people as I know, is that their women seldom have trouble in childbirth. I was now told that several of the women whose names I had recorded on my former visit and some of whom I remembered had died in childbirth, which seemed, in fact, to have been the most important single cause of death during the last four years.

We had some amusing experiences during the night with Emiu. This boy had been born either on the Diomedes or at Cape Prince of Wales, his parents had died when he was young, and his foster parents had brought him up in the vicinity of the mining camps around Nome. He was always a most amiable and charming little fellow. When at the age of fifteen or sixteen the miners discovered that he was a wonderful foot racer he became the pet and pride of every miner in that vicinity. For a year or two he won long distance races and acquired the name of "Split-the-Wind." Later somebody took him out to Seattle and for two years he traveled around, sometimes as a runner and at other times as an attendant at an Alaska moving picture show. He had never lived very much with his own people under Eskimo conditions, and anyway the snowhouse is unknown in Alaska except through the accounts of those Eskimos who have been with whaling ships at Herschel Island or farther east. These have brought back the stories but never the skill of snowhouse-building. I have known only one Alaska Eskimo who before 1913 learned to build snowhouses. Natkusiak accompanied me for a year among the snowhouses of Coronation Gulf and had been for ten or more years among the snowhouse-building people of Herschel Island and Cape Bathurst, and yet he had never built a snowhouse until he learned from me the fall of 1914 when we were caribou-hunting northeast of Kellett.

Emiu had heard stories of people living in snowhouses, but had never really believed it possible that the roofs would stand unsupported by rafters or that the houses could be kept comfortably warm without melting. Although he told us in the evening that he now understood that this could be done, we found during the night that he still did not believe it. I had been asleep for an hour or so when I was awakened by Emiu lighting a candle. When I asked what the trouble was he said that it seemed to him the house was getting so warm that he was afraid the roof might melt and cave in. I tried to reassure him, but nothing would do but he must get up and examine the roof to see that it was firm and not about to collapse. Several times during the night either Palaiyak or I noticed that Emiu was awake and in the morning when we question him he owned up to having slept scarcely a wink. That morning I suggested he had better climb up on the house and satisfy himself that it would not break down. He thought it would be better to pack up our cooking gear and cover up the bedding before he did so for fear the roof might break in. Palaiyak and I then climbed on the roof and were finally able to persuade Emiu to join us. Thereafter he was convinced of the safety of the snowhouse and enthusiastic about learning how to build one. But he was not very ingenious at it and somehow failed to grasp the principle. He was a persistent chap, however, and when we were traveling spent hours while the rest of us were within doors in building houses that invariably collapsed before the dome was finished. It was after Christmas before he succeeded in building his first real house.

One of my main concerns was to try to get two or three families of these people to come and live at our ship. It was for ethnological purposes I wanted them—to become thoroughly familiar with their language and to win their confidence so that they would discuss the more intimate things about their religion and customs. But I found it impossible to engage any one.

They all gave but one reason: that they knew that in the part of the straits where we were wintering seals were not common, and that they were so used to living on seals in winter that they did not care to live on anything else. We suggested that we might be able to kill enough caribou for them to live on caribou meat. This they said would be agreeable to them but they had little faith in our being able to get enough in that vicinity, seeing that the only district anywhere near where caribou were at all numerous in winter was, in their opinion, Banks Island across the straits to the west of us. They were deferential about our ability as hunters, saying that doubtless we could kill caribou when they could not, but that unless we had special means for seeing them it would soon be so dark that with unaided eyesight caribou would be hard to discover. On the whole, there was not enough probability of our securing meat for them to make them willing to come and live with us. I offered wages which must have appeared fabulous to them. For one thing, I made it clear that we would not sell a rifle to any of them for any price, but that I would give one rifle to each family that would spend the entire winter in the vicinity of the ship. Although this was a great temptation, they decided after consultation that even a rifle would not pay for the privation. They believed that they could not keep their health on the sort of food we had at the ship and that their strength of will would not enable them to force themselves to eat our food even if it were wholesome and nourishing.

Here I left the argument to my two Eskimo companions, who explained that formerly the Alaska and Mackenzie River Eskimos had been equally averse to white men's diet but that they had found by experience that white men's food was wholesome and agreeable and that it was no hardship to live on it. Emiu could say this in good faith, for he was really habituated to white men's diet. Palaiyak said it also in his enthusiasm to convert these distant cousins of his, but it was not quite true with him, for he was never happy unless he had a little fresh meat each day. The local Eskimos remained unconverted by all these arguments, concluding merely that the Mackenzie Eskimos must be very different from themselves if they could live on white men's food.

Of the people I was now dealing with about half had visited Captain Klinkenberg's ship when he wintered near Bell Island on southwest Victoria Island in 1905-06, and most of the same ones with a few in addition had visited Captain Mogg's ship, of which our Levi was then steward, at Walker Bay the winter 1907-08. Nearly all, with about twenty exceptions, had seen Natkusiak and me in 1911. This was the full extent of their association with white men except that (as mentioned above) one very old man, Pammiungittok, had as a boy of five or six visited Collinson in Walker Bay in 1852, and another had seen Hanbury in 1899 near Baker Lake.

The experience upon which was based the uniform opinion that our diet was unsuitable for the health and well-being of Eskimos and that they would never learn to like it, was that of a few who had tasted food on board either Klinkenberg's or Mogg's ship. The two men who had overtaken us on the road were especially emphatic, having tried the food of our party at Cape Kellett the previous summer. They said not one item had been found that was agreeable. They were very polite and deferential about all this. They had about the same opinion of our food that the ordinary white man has of the food of the Eskimos, but their ideas of courtesy towards strangers would not permit them to express their revulsion as violently as we express similar feelings when discussing the food and food tastes of a strange people. They were careful to explain again and again that they quite understood that we were used to our food and that doubtless we liked it, but this was because we were different not only in bringing up but possibly also more fundamentally.

I then tried to get as many families as possible to pay us a short visit. This they said they could not do at present because there was not enough snow for the building of snowhouses on the road, and they considered it too great a hardship for women and children to camp in tents at this season. They said, and my observation confirmed it, that the only place they knew of where there was as yet enough snow for house-building was the campsite which they occupied. The reason why they always camped here in the early fall was that this was the first of all places north of Minto Inlet for the accumulation of snowdrifts deep and hard enough for house-building. The best I could do was to persuade two young men, Nutaittok and Taptuna, to accompany us. We agreed to carry for them any food which they wished to take along, and assured them that we had plenty of seal meat and caribou meat so they would not need to eat anything else during their visit, which was expected to last only three or four days.

We spent only one night in the village. The next morning we purchased enough ethnological specimens to make a moderate load and in the afternoon started north. Nutaittok and Taptuna had at first thought they would take with them a considerable amount of meat, but at the moment of starting they changed their minds and left all behind except perhaps fifteen or twenty pounds.

On the way north we spent a day or two at our hunting camp. Our new friends found this visit attractive, for all our people devoted themselves to being as agreeable as possible. This was in the main due both to their desire to be hospitable and to my insistence that we must treat our guests as well as possible. But it was due in part also to a fear felt by our Eskimos of the local Eskimos. Nothing is more ingrained in the real Eskimo and nothing pervades more thoroughly his traditions and folklore than the idea that strangers are necessarily hostile and treacherous. Every Eskimo group always believes that wicked Eskimos are to be found on the other side of the mountains or down the coast at a distance. The Mackenzie River and Baillie Island Eskimos especially had many details of the bloodthirsty nature of the people to the east, although the experience of every one who during the last few years had come in contact with these people was that they were the most inoffensive and kindly lot that you could imagine.

A little way south of our hunting camp we had on the southward journey cached a whole seal and a quantity of blubber. A polar bear had opened this cache and had eaten all the loose blubber and about an eighth of that on the seal, not touching the meat. This is one of the many instances to show that polar bears, when they have a choice, make an entire meal of blubber. I don't think I have ever known them to steal meat if pure fat was available.

On our arrival at the *Bear* camp October 30th we heard the ominous news that three of our dogs had died of one of the several contagious diseases that are prevalent in the Arctic.

The diseases of the arctic dog are mysterious. The only polar authority I have read who claims to understand them is Sverdrup,* and he makes the suggestion that these diseases are always due to lack of care and that well-fed dogs, properly sheltered from the weather, never suffer from them. I have, however, seen dogs die under all sorts of conditions, and dogs of all ages. Some have been fat and others lean, some have been allowed to sleep loose outdoors, others have been kept in special dog barns and still others have been allowed to walk in and out of our houses just as house dogs are in civilization. No remedy ever tried by us has been of avail although we have tried several that have been given as infallible. These range from pure superstition, such as chopping off the end of a dog's tail or cutting his ear, to misunderstandings such as the idea that the disease is due to impurity of blood and that the blood can be purified by a large dose of sulphur.

The only suggestion I am able to make is that we have never lost dogs that were living entirely on land game and that the disease does not seem to prevail inland. We have, however, lost dogs in the spruce woods inland when they have been living in considerable part on seal meat brought from the coast. I should suppose, therefore, that there is some connection between the seal and this disease. Certainly not all seal meat can carry this danger to dogs, for then all dogs in the North would die. Apparently this disease results from the eating of specially infected seal meat, as trichinosis originates from infected pork and not from uninfected.

Neither of our visitors had ever before seen a ship, a wooden house, window glass, stoves, or phonographs. All these I was able partly to explain except the phonograph. Articles of metal, such as knives and cooking pots, interested them most for they not only understood them thoroughly but coveted them as useful in their hunting and housekeeping. I feel sure that had the ship been offered to them as a present it would never have occurred to them to wish they knew how to operate it so that they might be able to use it. They would have valued it only for the pieces of iron and soft wood to be secured by breaking it up. As for the house, they were interested to see how the pieces were fastened together with iron nails, but they had not been with us many hours before they began to comment to each other on how damp it was and how skin clothing would spoil if kept in such a house. Our windows had the advantage over the pieces of glare ice to which they were used that you could see through them and they inquired whether they could not purchase from us some window glass. Still they looked upon this as a curiosity rather than a necessity. A year later they desired our rifles but as yet they had no conception of their value and were not greatly interested in them. The phonograph, whether it sang or played band music, failed to keep their interest more than a few moments. I invited them to note how the noise seemed to come out of the horn, but as soon as I stopped talking they began to say something to each other about the cooking pots in operation on the stove.

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* "New Land," pp. 288 ff.

The distinction between the phonograph and the rest of the articles we showed them was the difference between ordinary things which they could understand and a miracle which, while they did not understand it, they accepted readily. Their own minds are not so filled with anything as with miracles. Those who understand primitive people know that to them nothing is more commonplace or uninteresting than a thing that appears miraculous. That is because while miracles are decidedly the exception with us, they are the rule with them, for there is so little of the operations of nature which they understand.

We kept pieces of caribou meat and seal meat continually boiling to make sure that our visitors could have what they wanted to eat whenever they wanted it, but Levi also used his full ingenuity in trying to devise other dishes that they might like. He tried canned fruits and puddings and pies, soups and sugar and candy. The visitors tasted politely; some of the things they swallowed but most of them they asked permission to spit out again. The thing that they disliked least was weak tea, unflavored with milk or sugar. When they saw that they could drink this they took great pride in doing so and before they left one of them was able to drink with pride a full cup of tea of the ordinary strength. He then wanted to buy from us a little tea and a suitable teapot so that when he returned home he could show the rest of the village that he could make it and drink it.

One of the most universal Eskimo traits is the dislike for anything very hot. During the last twenty or thirty years tea drinking has come in on the entire north coast of Canada and Alaska west of Cape Bathurst, and it is drunk as hot as we should drink it, but all the old people know that when it was first introduced it used to be drunk lukewarm. We found it so with our visitors. While they were able to drink the tea, they waited till it was so much cooled that most white men would have considered it unfit to drink. In general Eskimos eat more hot food in summer than in winter because cooking is then more convenient. At the Mackenzie River until some forty years ago no cooked food or warmed drink was used during the entire period of the absence of the sun. This extraordinary custom I had inquired about carefully. At first I imagined it was a taboo but all the old people have assured me that it was not. When white men began to come in the Eskimos felt no prejudice against eating warmed food and merely cared little for it because they were not used to it. An Eskimo is clear in distinguishing between things that are not done because they are taboo and others that are not done simply because they never have been done.

# CHAPTER XLIII

## TROUBLE WITH THE COPPER ESKIMOS

THE time had come for making preparations for my projected journey to Cape Kellett to visit Captain Bernard and get the sledges he was making. I also hoped to get at Kellett news of Wilkins. If the *Star* were in Banks Island he would have visited Kellett before now; no news from him would mean that he had crossed McClure Strait to Melville or Prince Patrick Island. Accordingly, I decided to send Captain Gonzales in my place to take our visitors back to their home village in Minto Inlet and to make further purchases there of ethnological specimens. On November 2nd they started, Gonzales, Jim Fiji, and Pikalu to make the full trip, and Emiu to go as far as Illun's hunting camp to fetch home some bear meat.

The evening of that day Storkerson's support party, Charley and Noice, returned. They reported having accompanied Storkerson and Herman to Hornby Point, which was the farthest reached by Wynniatt of McClure's expedition in his exploration of the north coast of Victoria Island. The trip had begun well except that the snow had been soft and the ice rough, making progress rather slow. In Prince of Wales Straits good going could generally be secured by leaving the land and traveling through the middle of the straits. But in crossing Collinson Inlet from Peel Point to Point Hornby much rough ice had been encountered and they were for long stretches compelled to build roads with miners' picks. To the north in Melville Sound they had seen only young ice, indicating that before the freeze-up the sound had been, at least in its southern part, free from winter ice.

It is upon the basis of similar evidence accumulated during the next two years that I believe Melville Sound is crossable by ordinary ice-going steamers of the whaler or sealer type at least two years out of three. In all probability the Northwest Passage can be made quite as easily by the route originally attempted by McClure and Collinson as by the one actually used by Amundsen. This route may have the disadvantage of a little more ice but it has the advantage of being freer from rocks and shoals and therefore better adapted to big ships. If the Northwest Passage is made by this route, a ship coming from the east through Baffin Bay and Lancaster Sound has the option when it gets to Cape Providence on the south coast of Melville Island of crossing thence to Cape McClure and passing around the west side of Banks Island by the route followed by the *Investigator* in 1851, or of coming across from Cape Providence directly into the mouth of Prince of Wales Straits and passing south there and thence through the whaling waters past Cape Bathurst and Herschel Island.

The support party brought me a letter from Storkerson saying that he expected to devote twelve days to survey work east of Hornby Point, returning then to headquarters. This would make him due home about November 22nd. November 4th Emiu returned with the bear meat from Illun's camp. He reported that the ice conditions were by now such that Illun had decided to move his camp south to Ramsay Island which, according to local Eskimo report, would be a good place for hunting bears and seals all winter.

Emiu brought another story that disturbed me not a little. Before Gonzales started I cautioned him to treat well our two Eskimo guests. But Gonzales had the theory not uncommon among whalers that "a native is a native" and that the best way to treat them is to make them understand from the beginning that they are your inferiors. The view is about the same as that commonly held in the southern United States with regard to the treatment of negroes. I know from old stories I picked up in Alaska that this method worked very badly when the whalers first came in to Herschel Island (1889). But there were as many as five hundred white men, South Sea Islanders, negroes, etc., in the fleet that wintered at Herschel Island, and as they stuck together and all treated the natives alike, they had the combined strength which forced their view upon the Eskimos, who gradually began to realize, much to their surprise, that instead of being superior to white men they were really inferior to them. My own feelings are such that I have never been able to treat the Eskimos otherwise than as equals. They treated me hospitably and well when first I came to them and had no resources of my own, and in the main they have continued to do so since although I have found exceptions among them as among other people. My experience has been that the less sophisticated the native the better he is to deal with. This is usually the experience of all travelers who deal with primitive people, except missionaries. For some reason missionaries generally bring back the report that the natives among whom they work improve continually as they become more civilized. Still there are exceptions even among missionaries. Some of them find the native the more agreeable the less sophisticated he is.*

Certainly the only practicable method of treating Eskimos who meet a white man for the first time is to deal with them as equals. Failure to do so was, for instance, clearly the reason why the two Roman Catholic priests were killed by the Eskimos of Coronation Gulf. One of the two Eskimos said to have done the actual killing had, with his family, traveled about with me the summer before, and I found not the slightest trouble in getting along with him. But these missionaries had come from the Mackenzie River Indians who for about a century have been used to being treated as social inferiors by the Hudson's Bay men and others and with whom the method now works well. I have been compelled to realize myself in dealing with the Mackenzie River Indians that the way to have the least trouble with them, at any rate, is never to allow them to feel that they are your equals. I must say also that of late years I am beginning to find that the north Alaska and Mackenzie River Eskimo is in this respect coming to be like the Indian or the southern negro, and some of my difficulties the last few years have been through my unwillingness to adopt the superior attitude which they have learned to expect.

Captain Gonzales had been cautioned that these natives were different from the ones he was used to dealing with at Herschel Island and must be treated about as white men would be under the same circumstances. But evidently the Captain did not agree with this, for Emiu told me that soon after they started the Captain had sat down on one of the sleds to ride awhile. When the Eskimos saw him do this they sat on the sleds also. This made the sleds rather heavy and slowed up progress, for there is considerable difference between one man riding and three. The Captain accordingly told them to get off, that he was the only one who was going to ride. But he spoke only the trade jargon which, while it serves for dealing with Eskimos who have once learned it as the Greenland or Alaska Eskimos have, is of no use with these people, who do not understand a word.

Gonzales then asked Emiu and Pikalu to translate to the local Eskimos that they were not to ride. This they did not dare to do for fear the others would take offense. So they tried to induce them to run, not by forbidding them to ride, but by urging them to get off so that they could make better speed. The Eskimos did and ran for a while but presently sat down on the sled again, probably not because they were tired but merely because they saw Gonzales riding and it appeared to them to be the correct thing to do as their host did.

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* See "Ten Thousand Miles by Dog Sled," by Archdeacon Hudson Stuck, pp. 24-25.

Gonzales now supposed that they were doing this in direct disobedience of his wishes whereas they, as a matter of fact, knew nothing about them. The Captain, who did not fully realize that his jargon was incomprehensible, spoke to them two or three times but they only grinned back at him in the most friendly way. This he took to be insolence so he jumped off the sled and upset it, throwing the two men into the snow. The first time this occurred they took it for a joke and scrambled back on the sled again, whereupon the Captain tipped it over a second time and apparently made it clear to them by gestures that he was angry and meant to be obeyed.

Pikalu and Emiu, pretty thoroughly frightened, tried to explain to the local Eskimos that these were the peculiar ways of white men and that they must not mind. The Eskimos, however, became moody and dropped behind on the trail. In the evening when camp was made they did not arrive until supper had been nearly cooked. Gonzales, who was hospitable and who felt sorry about what had happened, invited them to eat. Pikalu and Emiu again tried to explain the situation but, while the local men answered politely, it was clear that their minds were not at ease. During the night they talked to each other and slept little. The next morning they packed in their bags the things they had purchased from us at our camp and started off ahead. Gonzales himself was worried now but there was nothing that could be done. He tried to induce them to camp with him the following night but they refused, saying that they would probably go all the way home. In ordinary course this was about a four days' journey. Our Eskimos urged them to stop on the way at Illun's hunting camp, telling them that they would be well treated. Later when the Captain's party arrived at Illun's camp, it was found that they had not been there. They had evidently struck overland, making a straight course for home.

As I have said, this story worried me, for it appeared that our amicable relations with these people would be at an end. Taken together with the probability that Kullak's wife would die, it now seemed that they would have at least two serious grievances against us.

I should have to start on my trip to Cape Kellett before Storkerson arrived from his surveying journey. I accordingly wrote telling him that with the coöperation of the entire ship's company of the *Bear* he was to prepare for the ice trip of the coming year. The first thing to do was to fetch the two good sledges which we had left at Mercy Bay. This meant an overland trip of about a hundred miles if the direct route were taken which might be difficult as the journey had to be made in the darkness of midwinter and the unknown country might prove mountainous. By the coast the distance would be nearly double and it was likely that along the Melville Sound shore of Banks Island the ice would be rough.

When the sledges had been brought home and repaired if necessary, a depot of sledge provisions was to be made at the northeast corner of Banks Island, Point John Russell. Now that we had plenty of pemmican and the other foods commonly used in polar exploration we would make use of them to take us through the period of limited daylight when hunting is difficult. We expected them to last until we reached the vicinity of our new land which we thought would be in April, for the main task of the spring was to be the survey of land already discovered. Next year from the more northerly base we hoped to establish we would make journeys farther afield.

In preparation for the trip to Banks Island I built an experimental snowhouse to give the men a little practice, for in this as in many other undertakings a good deal depends on the prompt and intelligent coöperation of every one engaged. The building I would do myself and did not expect the men to learn except gradually, but the cutting and carrying of the blocks, the filling of the crevices, the digging of the tunnel through the foundation snowdrift to provide an entrance at a lower level than the floor, the building up inside of the bed platform and covering it with skins, the setting up of the cooking gear and the like, all these I wanted the men to practice in the favorable conditions of the base where we were not tired and where the work could be done in daylight. On the actual journey the work would have to be done perhaps in half darkness, perhaps by moonlight, and even possibly by lantern light.

After building two or three experimental houses, we put up on November 12th about as good a one as could be built. It was ten or eleven feet in diameter with a dome about seven feet above the floor. We fitted it up properly with all the camp equipment, covering the bed platform with skins. When this was done the various members of the expedition visited it. The Eskimo women, who would not forego one of their ten daily hand-washings for the sake of the dry heat which would reduce the damp of the frame house, were nevertheless thoroughly dissatisfied with it. Now when they saw how clean and dry the snowhouse was they asked permission to move out into it daytimes to do their sewing. This was desirable for they could work there much better, partly because there was nobody moving to interfere with them but chiefly because they were more comfortable and had better light. Although we used no ice window, plenty of daylight came in through the roof, which was made of blocks no more than two and a half inches thick. The days were now short; in fact, the sun had some time before ceased to appear above the high land to the south. The more industrious women used to sew seven or eight hours a day. For them the snowhouse was as desirable after dark as in daytime, for two or three candles stuck around gave more light than the several "Rochester" lamps used in the main house.

November 16th we made the start for Cape Kellett. The party consisted of Noice, Martin Kilian, Emiu and myself, with two sledges and nine dogs. We expected to meet Captain Gonzales on the way and get a few more dogs from him, and did so the following day near Deans Dundas Bay. I then had the story of the rest of his adventures with the Minto Inlet Eskimos, and it was even worse than I had feared.

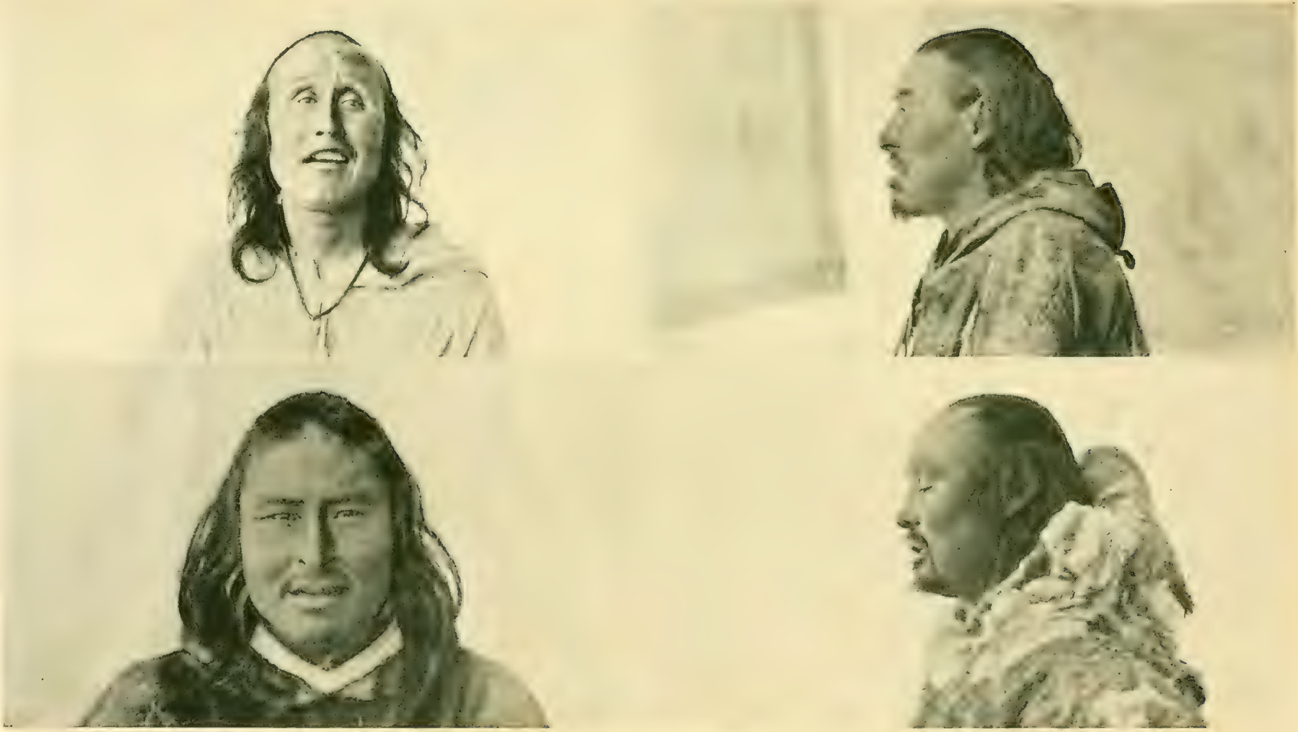
On the way down the Captain's party had spent a day or two with Illun at his hunting camp on Ramsay Island, and had then continued to the village in Minto Inlet. The Eskimos had had plenty of time to hear and to brood over the story of Nutaittok and Taptuna. The Captain arrived in the afternoon while there was plenty of daylight and moved into the old snowhouse that had been built for our shelter.

The people at first showed no open hostility but were merely distant and non-communicative, and in every way different from their ordinary selves. Later when the Captain attempted to commence trading with them a crowd gathered around. An article which they would ordinarily have examined politely and handed back with an inquiry of the price, they now passed one to the other until they got it to the outskirts of the crowd when some one would take it and run away with it. Presently the Captain's trade articles were seen to be not numerous enough to go around, and there set in a scramble where every one seized what he could and ran away. In some cases there were fights, although none serious, where several Eskimos struggled for the possession of a single article. In a few minutes the Captain's party was stripped of everything they had which the Eskimos valued, even down to many articles which they had brought for their own use. Luckily no one of the Eskimos as yet coveted rifles and no attempt was therefore made to steal these. Nor were the dogs, harness, sleds, food or clothing interfered with, for none of these articles had appreciable value unless it were the iron shoeing of the sled. I have often wondered since why they did not break up the sled to get the shoeing. It may have been that no one thought of it, or it may have been that they thought it going too far.

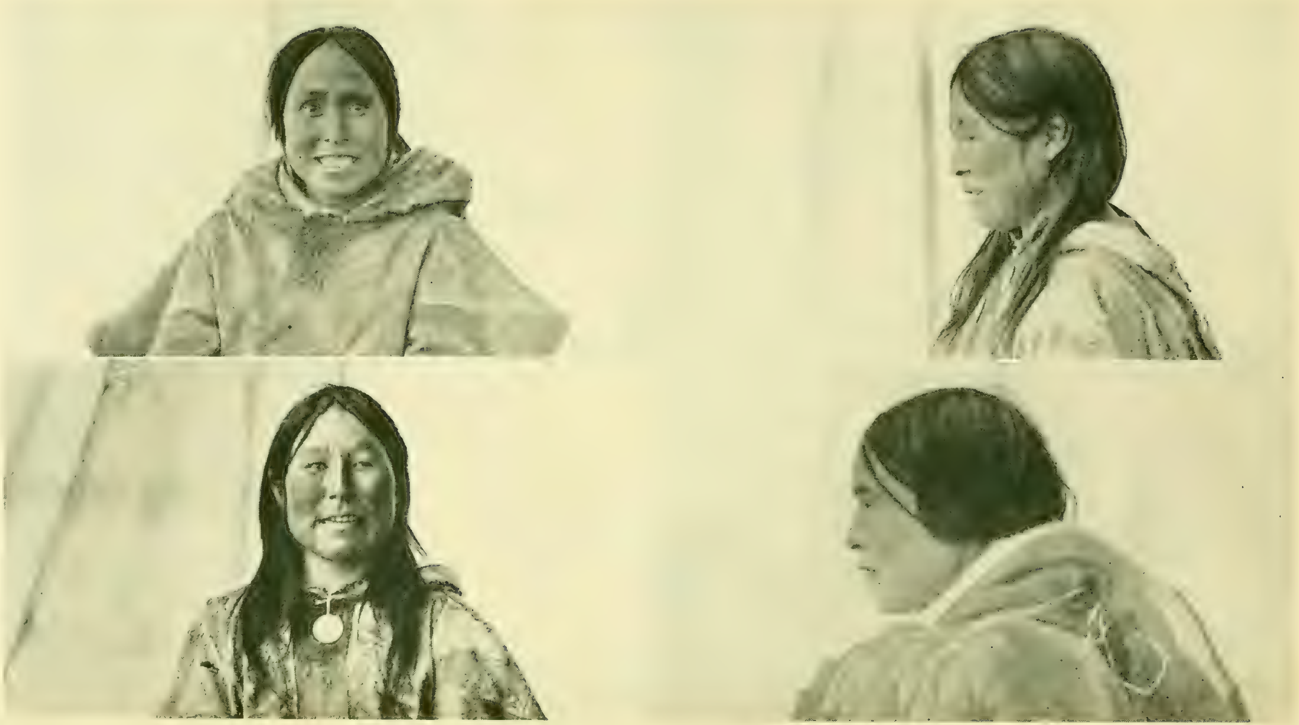
During this rumpus there had been no threats of violence towards the Captain or his party. His Eskimo companions, Palaiyak and Pikalu, were more frightened than either himself or Jim Fiji. The Captain thought of taking a rifle and trying to get back the things by threatening to shoot, but Palaiyak and Pikalu were able to dissuade him by saying that they would go around and talk to the Eskimos and try to get them to pay back by reminding them of their previous friendly dealings with me and also by hinting that I was a powerful magician who would be able to punish them with an epidemic or in some other miraculous way if I became angry with them.

Both Pikalu and Palaiyak were later on very proud of their own courage and astuteness. According to their belief, their lives were really in great danger for, as mentioned above, that is the traditional attitude of strange tribes toward one another. But apparently when they began to go around the village the people had treated them in a most friendly way, making it clear that the grievance was against the Captain and possibly against me, for they inquired whether Pikalu and Palaiyak considered that I had directed the Captain to treat them as he had treated them. Our Eskimos reminded them of how differently I had treated them, and said they themselves knew that I had cautioned Gonzales to treat them well. They explained, too, that Gonzales was acting in a way common among white men around Herschel Island and that the Herschel Island people had long ago learned not to mind it, for it was merely the peculiar way of white men.

During the night the people seemed to have consulted and the next morning every one in the village arrived with something to pay for what he had taken. Some told what it was they had taken and paid handsomely, but others refused to name the article and merely asserted that what they were bringing in payment was all they could give. In this way the Captain eventually received nearly



Copper Eskimo Men.



Copper Eskimo Women.

two sled loads of ethnological material, but it was not nearly so good as it would have been had he been able to select and bargain for separate articles instead of being compelled to take whatever they brought him.

Before this I had been eager to persuade the Eskimos in as large numbers as possible to visit the ship, but it now appeared that if they came in large numbers they might rob us of whatever they wanted, as they had done with the Captain's party. It seemed that the only thing to do now was to let them know that no Eskimo would be allowed to come within a distance of one or two hundred yards of our base camp. I told the Captain that I would pass this information on to the natives and directed him to see to it that if Eskimos came in any number they should not be allowed to enter the house or come to close quarters with the crew. Men armed with rifles have a great advantage over those armed with bows and arrows and knives as long as there is a considerable distance between them, but at close quarters the knives of the Eskimos would have been as efficient weapons for them as revolvers in the hands of white men. Revolvers, too, were scarce with us—there were probably two or three altogether.

The day after meeting the Captain's party we reached Illun's camp at Ramsay Island. Four or five Eskimos had accompanied the Captain from the village to Illun's place. They had been pleasant while they were there and had said they would come back again to visit Illun. The prospect of this visit was by no means pleasing to him, for he had the same idea that I had, that having once found that they could take things in a high-handed way and having, as they thought, a grievance against us, there was no telling how far they might go.

After a day or two at Illun's place I sent Palaiyak and Emiu to the Eskimo village to see if half a dozen men would not come over and trade with us. My main purpose was to have a talk with them under as favorable conditions as possible, so as to smooth things over. I sent the explicit message that we would not deal with a large party, and that I wanted no more of them to come than could sleep in our house over-night. Palaiyak and Emiu were not very enthusiastic about making this trip. We took the precaution to have them carry nothing that would appear of great value to the Eskimos, the message being that if they wanted such things they would have to come to Ramsay Island to get them.

The next day our messengers returned accompanied by an old man, Allanak, and his grandson, Kuniluk. They did not come to trade but brought a few things for presents. We were in another sort of trouble through the ingenuity of Pikalu and Palaiyak, who had explained, the evening the Captain was robbed, that I had the power to make the whole village sick. It appeared that now the whole village was sick. They had been taken with an extremely severe cold, the severity being perhaps due to the fact that they had caught it from us. There was no use trying to explain to them the germ theory of contagion, nor any point in trying to evade full responsibility for the visitation. The method I took was to let my Eskimos explain for me that when Captain Gonzales met me he had told me the story of their treatment of him in a very bad form, making me very angry, and that it was while still angry that I had sent the disease upon the village. I now understood that they had had more provocation than I thought and that they were really good and friendly people and I was therefore willing to let the disease die off gradually without any serious consequence. The old man asked me again and again whether I was going to have any of the people die, and spent the evening in telling me all the extenuating things he could think of, saying how much they admired me and how well they had liked Natkusiak and me when we visited them some years before. All this flattery was designed to get me to call off the disease.

We treated the old man and the boy as well as we could. We accepted his presents and did not give him any in return, for, according to his view, repayment would have destroyed their efficacy. But we made some trades with him, giving him very favorable prices for certain articles that he had brought without intention of selling, such as part of his clothing. When I bought his coat he was so poorly dressed that after selling it he began to have misgivings about making the trip home in his under-coat even though the weather should be good to-morrow, but I reassured him by offering to lend him a coat and saying that I would send a sledge with him to bring it back. I bought also his two dogs. He had two others which he had borrowed for the occasion and these would serve to take his light sledge back. The next morning the weather was so mild that in view of the comparatively short distance the old man assured us that he could get home all right in his under-shirt. At parting I sent word by him that, while I would stop the disease from which they were suffering, I would nevertheless have to punish them for their treatment of the Captain. This punishment would take the form of forbidding them to come in large parties to visit us. The largest number that we would receive were as many people as there are fingers on one man's two hands. Although these people have no words for numbers above six, it is not difficult to make them understand numbers up to thirty or fifty by saying, "as many as the fingers and toes of two men and the fingers on the hands of one."

During this visit of the two men to Illun's camp I realized that they had a grievance against our Eskimos as well as against Captain Gonzales. They spoke the Eskimo language with an accent which naturally differed from any familiar to our Eskimos who thought it very funny and mimicked it continually. Had they confined themselves to the mimicking our visitors might not have caught on, but our people thought it so funny that they could not help laughing while they were doing it, which made it clear to the visitors that they were objects of ridicule. Our Eskimos were illogical enough to be at the same time frightened of the local Eskimos and willing to make fun of them. At a word from me suggesting that if they were afraid of the Minto Inlet people they had better not make fun of them, they desisted and did not do it again. I now inferred that Nutaittok and Taptuna had had this grievance on their homeward journey to add to the Captain's treatment, and when taxed with it Palaiyak and Pikalu owned up. They had been in the habit of mimicking the local speech on the way down, but it had never before occurred to them that doing so would give offense.

During the week we spent at Ramsay Island waiting for the passing of the new moon and the benefit of a full moon across Banks Island, I picked up a great deal of Eskimo lore. Most of it was of the ordinary kind, but one story was interesting in showing how white men's superstitions can be grafted on to their own. I had previously been familiar with the strange forms that much of the missionary teaching of the Christian religion takes in their minds, but I now had an example of the adoption of a belief which most of our people have long ago shed.

I got the story from Kutok but it was confirmed by all the rest of our Eskimos except Palaiyak, who believed it now but had never heard it before.

It was when Leffingwell was living at Flaxman Island and had for cook a white man named Joe. Living on the island at the same time was the old couple, Oyarayak and his wife Suksranna, with their daughter Nannegrak. According to Kutok, Joe wanted to marry this girl but the arrangement was opposed by Leffingwell, and this made Joe angry. Sometime later Nannegrak was taken severely ill. The local shaman, Tagluksrak, went into a trance and discovered that Joe had made a pen drawing on paper of a woman's face and had written the word "Nannegrak" across the forehead. He had then stabbed the picture through with some sharp instrument. Kutok thought he stabbed it through the forehead for the chief pain Nannegrak suffered was there. Tagluksrak saw while under the spirit influence Nannegrak's name written in black across her forehead. The shaman announced that he could not prevent her death for the magic was too powerful for him to combat, and all he could do was to explain the cause. All our Eskimos agreed that in the country west of Herschel Island this story was everywhere known and everywhere believed. My Eskimos had themselves told it to Duffy O'Connor, who had told them that the method of causing illness by making an image and then pricking or burning it was well known among white men to be efficacious and had formerly been much practiced. This was the first time I had heard the Eskimo explanation of Nannegrak's death. Leffingwell had told me about it, but I do not remember how he diagnosed the disease—probably as pneumonia.

The idea of sympathetic magic may not be fundamentally unknown to the Eskimos except through white men's superstitions, but certainly this is the only story of the sort that I ever picked up. In view of the fact that this superstition was common in Europe until lately and the fact that sailors are generally superstitious, it would be strange if in the long association of sailors and Eskimos in the forecastles of whaling ships this belief had not been passed along.

In a country like North America, where every landmark of consequence must have had its native name before we white foreigners appeared on the scene, it would seem manifestly proper that mountains, lakes and rivers should continue to be known by their immemorial designations. I should be a great advocate of this were it not my experience that native names are so badly mispronounced by the earliest whites who come into any given district that few of them could be understood by the people whose language it is attempted to follow. When a stranger comes to any people he is sure to mis-hear their words, interpreting them into unwarranted likeness to the language which he speaks. A person who is not a trained phonetician does not hear the sound actually spoken but hears instead the sound out of his own language which most nearly approximates the strange sound. Often the approximation is so far from the truth that the native name written by a phonetician and the same name written by a trapper or trader do not resemble each other even remotely. To illustrate this I shall give several examples of Eskimo words as they sound to me after I have acquired the language and as they sounded to me when I first came North.

Between Herschel Island and the Mackenzie River is a point which may be Escape Reef of Sir John Franklin. It is now called by the whites and is likely to continue being called *Appawuchi* (where the "u," as in all Eskimo words written by me, has practically the sound of "oo" in poor). Now that I know and speak the language, this word sounds to me like *Akpaviatsiak* (Ak-pa-vi-at-si-ak). Here some of the sounds have been changed and six syllables have by white man's practice been contracted into four.

There is at Herschel Island an Eskimo called by the whites "Cockney." At first I thought this was a nickname applied by one of the early whalers. When I asked the man for his native name he gave it to me in a way that sounded to me at the time very much like "Cockney" and I realized that the white men were really attempting the approximation of the real name. But now that I am familiar with the language it sounds to me like *Kanirk,* which certainly is not very close to "Cockney."

In his book, "Conquering the Arctic Ice," Mikkelsen speaks of the father of the girl killed by sympathetic magic as *Osuruk.* I write that man's name *Oyarayak.* There was in the vicinity of Flaxman Island an Eskimo woman married to a white man who was called by her husband and some of the other white men *Kasha* (spelled by them Cassia). After I learned this woman's name from herself I asked her husband why he called her *Kasha* and he answered, "Because it is her name," which he later explained by saying that it was as near as he cared to bother to come, for in his opinion it was of little consequence how native names were pronounced. Some of the whalers differed with him in this opinion and were particular to call his wife *Kaya.* Still others called her *Ikaya.* I now write that woman's name *Ikkayuak.*

Both at this time and later I tried to teach the Minto Inlet Eskimos to pronounce correctly my own name and the names of my companions. They had already decided that my name was properly pronounced "Nappahinna" but I eventually taught them to say "Stepahinna," which was as near as they could get it. My own Mackenzie and Alaska Eskimo companions called me "Sitepasi." Captain Gonzales they called by an imitation of his first name, Henry, which was pronounced Annui. My Mackenzie River companion Palaiyak they called "Palaina;" Illun they called "Illuna;" Martin (Kilian) they called "Matik." None of these names were they able to improve through instruction except that they eventually learned to pronounce Palaiyak and Illun. Their mispronunciation of Jim (Fiji) gave us endless amusement. They called him first "Perk" and insisted that this was the way it sounded to them when we pronounced it. Eventually they were able to change it to "Zerk"—they appeared unable to hear the "m" following the vowel as anything but a "k." Billy to them was "Pili" and Mac was "Mike."

At the time of the Franklin search Dr. John Rae made a great impression on the Eskimos of Coronation Gulf. They have many stories which I have indubitably identified, but in all of them Rae appears as "Nerk."

It is safe to say that many of our alleged Indian place names do not come much closer to the original than "Perk" or "Zerk" to our pronunciation of "Jim," which brings us back to my reason for lack of enthusiasm in advocating the retention of native place names. But what does distress me is a thing that occasionally happens where a native name gets correctly placed on the map and is later removed to make way for a mispronunciation of the same word. A notable instance is one of the largest Alaskan rivers which appeared correctly on the old maps as Kuvuk but appears now as Kobuk. This is especially deplorable as it confuses this great river with an even greater river nearby. The spelling Kobuk comes very near being the right Eskimo name for the Yukon (called by the Eskimos Kopak).

# CHAPTER XLIV

## MIDWINTER TRAVELS AND PLANS [1915-16]

BY November 30th the moon was at the awaited stage but that day there was a blizzard. We started at 10:45 the next morning, which is early as the sunless days go in these latitudes around Christmas. When the weather is clear this season affords between three and four hours around noon of twilight clear enough for the reading of ordinary print. There was young ice on the straits, so we took with us, in addition to two sleds intended to take us to Kellett, a third sled for hauling a tent which we expected to pitch in the middle of the straits for the first night's sleep. Palaiyak went along to take the tent home in the morning, while we counted on making Banks Island and finding a snowdrift for a snowhouse for the following night. I imagine that this crossing of Banks Island was a great adventure to Noice and Martin who were new at it, but it resembled the same crossing made by Natkusiak and me in 1914 closely enough so that the description need not be given in detail.

Our experience the first night on Banks Island was a little special, however. We found a village of three or four deserted snowhouses which had been built by the Kullak party on their way from Cape Kellett to Minto Inlet. All these houses had caved in and were uninhabitable. Evidently the snow had been so soft that the roofs had begun to sag at once through the shrinking of the blocks. None of the houses had fallen with a crash, as indeed snowhouses never do that are built of soft snow, and it is probable that the builders were able to occupy each over-night. But by morning the roofs must have been pretty low and in the week or two that had since elapsed the roofs had sagged until the centers of the domes touched the floor.

Only one house was in passable condition and even this had a bell-shaped depression in the roof drooping to within about two feet of the floor. Thinking the men might be tired I asked them which they preferred, to crawl into this old house or build a new one. I had to tell them that ours might sag in the same way but they voted for a new building, partly doubtless because snowhouse building was novel enough to be fun. I searched around but was unable to find any snow harder than that used by the Eskimos. In fact it was probably a little softer, for the blizzard of two days before had covered the underlying snowdrift by at least two feet of fresh drift. I tried to shovel this soft snow off and cut blocks from beneath, but both drifts were so soft that there was no clear line of demarcation between them. I made the mistake of building the house unnecessarily large. The softer the snow the easier it is to build if the cakes are strong enough, and the house was erected with remarkable speed considering the inexperience of my companions. By the time we had finished there was a stiff blizzard blowing. We cooked supper. The heat from the cooking combined with the rise of temperature outdoors due to the gale softened the blocks still further, and towards the end of supper when somebody looked up we found that the roof, which had an hour before been a hemispherically curved vault, was now nearly flat like a ceiling, with the distinct appearance of a sag one side of the center. We hastily got together all our boxes (we carried food in one, cooking gear in another, and writing materials in a third) and made of them a pillar of support, but the roof continued sinking on both sides of the pillar with the promise that in half an hour or so the top box would cut a square piece out of the roof, allowing the rest to sink down upon us.

There was but one thing to do. The caved-in Eskimo house had at least the advantage of an ice crust in its interior due to former heating. We had to put on our outer clothes in a hurry and were just able to get our gear out of the house before it became so low as to make moving about in it difficult. We now dug a tunnel into the old snowhouse. On interior view it appeared that the central depression had sunk so close to the floor that the only method of accommodation for us was to sleep each with his feet at the head of the next man in a complete circle around the house. We made a pillar of boxes again, afraid the roof would sink under the weight of snow from the outside, especially when softened by the heat of our bodies. Thanks to the inside ice crust our pillar worked very well and we passed the night tolerably, although some of the bedding got wet because of our being so close to the walls as to touch them. It is our great pride always to keep bed-clothing dry in winter, and although some of the bags got pretty badly wet we had them all dry long before we got across to Kellett and without hanging them up. They were never wet on the inside and the outside dried through having us warm inside them, the steam generated in the drying process rising to the roof and clinging in the form of hoar frost.

On arrival at Kellett we found every one well and received the news that Wilkins had visited them. The *Star* had proceeded up the west coast of Banks Island the previous fall without any trouble till she was past Norway Island. There they came to ice that had not moved the whole season. The weather was such that they expected it to move, otherwise they would have stood out to sea twelve or fifteen miles and tried to get around it. But the same wind that prevented the *Polar Bear* from proceeding up the west coast of Banks Island brought drift ice that closed them in and destroyed the last chance of getting farther.

The *Star* was now wintering safely about twenty miles north of Norway Island and I was well satisfied with her performance. She was now exactly in the place where we had wanted her to be last year. This year she was not quite as valuable as she would have been last, for our exploratory journey from that corner to the northwest had been made already and the program of the year lay to the northeast. But in a country where one is accustomed to be thankful for small favors, I was exceedingly grateful to know that we had her outfit that far north.

With our resources scattered at three such divergent points as Prince of Wales Straits, Cape Kellett and Cape Alfred, it was necessary to have a careful plan of coöperation. For that reason I asked Thomsen and Emiu to make a quick trip to the *Star* to bring Wilkins down for a conference, and occupied myself meantime in formulating a report to the Government, outlining past events and future plans.

On New Year's day in 1916 Thomsen got back bringing Wilkins and Castel, and I heard for the first time the complete story of what happened after Wilkins left us on the ice at Cape Alfred early the preceding April.*

They had reached shore within two or three hours and had proceeded south along the coast, being delayed through the circumstance that I had been forced to give them only such dogs as were least adapted for our main ice journey. These were good dogs but sorefooted through the crustiness of the snow that lay on the old ice along the Banks Island coast that winter. Boots had to be made for most of them, but progress was fair in spite of handicaps. At Kellett the spring was exceptionally early and thaw water began to run down the southward hills before they were able to leave, which was late in April.

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*See ante, p. 294.

Wilkins' companions were Crawford, who was leaving the service of the expedition, and Natkusiak, who expected to return with Wilkins on the *Star*. In crossing the southern end of Banks Island they found the season less early as they went east, and for a long while had no trouble with the spring thaw. As reported to us by Kullak the previous summer, Wilkins had met a party of Eskimos in the straits near Minto Inlet and obtained several dogs which enabled him to make better progress. But he got to Dolphin and Union Straits only just in time to cross them safely, for the tide currents there eat up the ice rapidly in the spring. Furthermore, there is a sharp change in climate as one crosses from Victoria Island to the mainland. When I crossed those straits the spring of 1911 it appeared to me that the season was about a month farther advanced on the mainland near Point Tinney than on the Victoria Island coast sixty miles northeast.

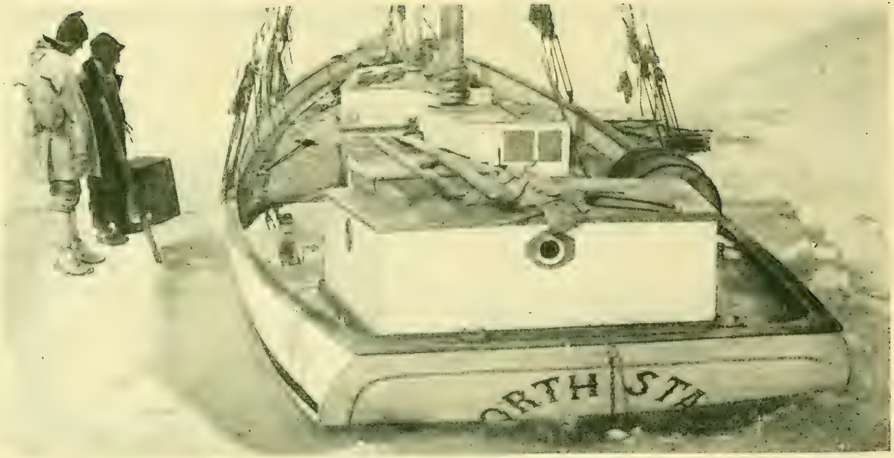
Wilkins told me that as he approached the base of the southern section of our expedition the first man he encountered was Johansen, our biologist, who remarked after several questions, "Of course you saw no trace of Stefansson." This remark was a key to the attitude of the whole party towards the question of our being alive.

On arrival at the base Wilkins showed Dr. Anderson his authorization from me to bring me the *Star*. Dr. Anderson replied that he would not surrender the *Star* and advised Wilkins to proceed westward immediately along the coast by sled so as to get out, if he could, and so report to me. Wilkins asked for a written statement to this effect and Dr. Anderson said he would make it out. Wilkins understood that Dr. Anderson had a consultation with the members of his party and asked them for their support in his attitude of refusal. But the position taken by the staff was that they would not place themselves on definite record as disobeying my orders, and that it was the part of the ranking officer of the party to take the whole responsibility of whatever decision he chose to make. Thereupon Dr. Anderson told Wilkins he would surrender the *Star*, but requested that before she was taken away he and certain members of the scientific staff should be transported by her to Bathurst Inlet. This was a most reasonable request to which Wilkins agreed.

The *Star* is a shallow, flat-bottomed vessel built to be hauled out on the beach at the beginning of the winter freeze-up. For

*Star, Sachs* AND *Alaska* AT HERSCHEL ISLAND.

*Star* AT BERNARD HARBOR.



THE *North Star* HAD SUNK.

THE SMOKING CLIFFS—FRANKLIN BAY.
Burning Coal Mines?

the first time in her career this had not been done and she was lying in the ice of Bernard Harbor. With the coming of the spring thaw the same thing happened to her that had happened to the *Duchess of Bedford* of the Anglo-American Polar Expedition, the same thing, indeed, that is bound to happen to any similarly unprotected wooden ship. The caulking in the seams freezes to the ice, and when the ice expands and contracts with changes of temperature the caulking is plucked out from the seams of the ship. Vessels intended to lie in the ice during the winter are protected against this action by a hardwood sheathing put on as much for this purpose as for strengthening the ship against its encounters with the ice during summer navigation. When Wilkins arrived there was already much thaw water in the harbor and the *Star* had filled through her opened seams. Fortunately the harbor where she lay was so shallow that she did not completely sink. Wilkins now had a difficult and disagreeable task in getting her out, re-rigging and cleaning her for the summer work, and getting into condition the rusty, water-filled engines.

Contrary to our experience at Cape Kellett and that of everybody on the mainland from Cape Bathurst west, the spring in Dolphin and Union Straits was exceptionally backward so far as ice movement was concerned, and it was late in July before the *Star* was able to get out. Wilkins then took members of the southern section down to the vicinity of Bathurst Inlet, returning as quickly as he could but too late to connect with us at Cape Bathurst and too late to prevent my purchasing the *Polar Bear,* a thing I should certainly not have done if I had not been convinced that the *Star* was going to fail us again.

On reaching Bathurst and receiving his instructions there, Wilkins discharged Crawford, who up to this point had been acting as engineer, and taking the work of engineer himself proceeded to Kellett. He would have liked to wait for me there and did linger for several days, but our unfortunate delays with the *Polar Bear* made the season so late that he did not dare to wait longer, and left the last week of August to attempt taking the *Star* to the northwest corner of Banks Island or farther if he could. It had been his hope to cross to Melville Island and enter Liddon Gulf or one of the bays just west. Had he succeeded it would have been a wonderful stroke, for I know of no winter base in the Arctic that I should prefer to one on Liddon Gulf. But he had been prevented from doing this and now lay about twenty miles south of Cape Alfred.

The autumn caribou-hunting at Cape Kellett had not been successful. Thomsen and one of the Eskimos, Alingnak, had been out for a week but had failed to get caribou, partly through inexperience but mainly perhaps through unfortunate weather. Caribou seem to be more plentiful in the northern end of Banks Island in winter than in the southern end. Wilkins, now an excellent hunter, had gone to work energetically in the north, and with the invaluable assistance of Natkusiak had secured all the caribou he considered necessary for the winter. This done he had established for Natkusiak a hunting camp on the Gore Islands, an ideal location for seals and polar bears, and Natkusiak was there now alone. As happens in such places, ice conditions had sometimes been bad for two or three weeks when no seals were secured, but on an occasional favorable day Natkusiak would get ten or more during the brief three or four hours of noon twilight. He had also secured several bears.

After talking things over with Wilkins I was able to decide on the plans for spring. I would send Thomsen, Noice and Knight with two dog teams back to the *Bear* by the route we had just traversed. They would pick up Illun's hunting camp at Ramsay Island and move everything to the *Bear*. Here Thomsen would deliver to Storkerson and Gonzales instructions outlining the spring work. In general Gonzales was to see that the crew of the *Bear* coöperated with Storkerson in everything he desired. Storkerson was to start late in January for Cape Alfred by way of the north end of Banks Island and I would meet him in February somewhere on the north coast. Meantime, with the resources at Kellett and the *Star*, we would prepare everything so that early in March Storkerson could start with four dog teams northwest from Cape Alfred. This last was not wholly a desirable plan, for the journey of the previous spring had already been made in this direction and Storkerson would have to travel for some time through explored territory. However, we had been handicapped the previous spring by sorefooted dogs and a late start. With the superior outfit that Storkerson would now have and with a start more than a month earlier, he would be able to traverse the explored area in about ten days and should be able to do good work beyond. Such were my plans and ideas about that part of the exploratory work which had to be entrusted to others. It was the main part of the spring program.

I assigned to myself the further exploration of the land discovered the previous spring (Borden Island). Several teams were to go from the *Bear* to Melville Island, making a depot for us in Liddon Gulf. After starting Storkerson off from Cape Alfred on the journey that would take our best men, dogs, and sledges, I would use only what equipment was left, confident that the already known richness of game in Melville Island and on our new land would make it possible for me to do extensive spring and summer work with no matter how poor an outfit. When one is committed to the method of living off the country a journey of any length can be undertaken, and poorness of equipment will merely make the work a little less pleasant and slower of progress. Apart from serious illness of the men, death of many dogs, or absolute breakdown of every sled, some progress can always be made if one looks to the territory ahead to provide sustenance.

In pursuance of these plans Thomsen, Knight and Noice started January 6th for the *Bear*, and two days later Wilkins, Castel and Martin Kilian left for the *Star* and Cape Alfred to prepare for Storkerson's arrival. I remained behind to finish my reports, since there appeared to be nothing pressing to do at Cape Alfred.

# CHAPTER XLV

## A NEAR TRAGEDY

ON the 23rd I started for Cape Alfred with two sledges, sixteen dogs, and the Eskimos Emiu and Alingnak, his wife, Guninana, and their daughter, Ikiuna, a girl of ten or eleven. We traveled without adventure, sometimes camping in the snowhouses built by Wilkins' party, but more often failing to find them on account of the nearly complete absence of daylight on cloudy days and the covering up of their trail through intervening blizzards.

Near Bernard Island we did have an adventure. We passed the east end of the island the last evening of January and camped in one of Wilkins' snowhouses found about two miles beyond. The previous fall Thomsen and Knight had made a trip to Bernard Island and placed on the east end a depot of pemmican and kerosene. This was before any one knew that the *Star* was only twenty miles to the north and at a time when I thought such a depot might be convenient for sledge parties traveling in winter. I now wanted to pick these things up and carry them to the *Star,* so we thought we would wait for daylight to locate the place where they were.

The next day was beautifully clear and at noon the sun came almost to the horizon, so we had full daylight by which to discover the depot with the glasses and even to discern it with bare eyes when once we knew where it was. Emiu was then told to fetch the things sometime during the day, supposedly about noon or soon after.

Emiu, as we have said, had spent a large part of his life around Nome and had there absorbed the Alaska idea of fast dog driving. He took great delight in hitching a large number of frisky dogs to a light sled and dashing across country at twelve or fourteen miles per hour. This inclination we found useful and cultivated it, giving him the fastest and liveliest dogs and using him and them whenever it was necessary to send a message a comparatively short distance at high speed. It should not have taken him more than

an hour to go from our camp, pick up the two or three hundred pounds at the depot, and come home.

I spent the day talking with the Eskimos and writing down folklore and linguistic notes. Guninana is one of the best Eskimo informants I ever had and some of the chief ethnological results of my former expedition were based upon her information. I was absorbed in what I was doing and did not go outdoors, but believed that Emiu was already doing his errand. But about two o'clock we had something to eat when Emiu, to my surprise, came in and joined us. He explained that he had been practicing snow-house-building all day and that he had now built a beautiful porch to our structure of the previous evening, inasmuch as the old house left us by Wilkins was not large enough for our entire party. I suggested that he had better make his trip to the depot right away, which he said he would do, remarking that it would only take a few minutes.

No one in the camp knew exactly when he left but presumably it was about three o'clock when daylight was nearly gone. There was clear starlight, however, with little reason for any one to lose his way. When at five o'clock I went outdoors and found Emiu and his sled missing I was not immediately disturbed, for the weather was beautiful and there was starlight enough so that our sledge trail of the evening before on the snow could be seen by any one trying to follow it. But at five-thirty I placed a lighted lantern as a precautionary measure on top of the house. This beacon could be seen for at least five miles in every direction, but there was the trouble with it that a lantern seen on the horizon on a starlit night looks so much like a star that only a careful person will distinguish one from the other.

By eight o'clock we were genuinely alarmed. We pictured what had happened. Emiu could not have failed to reach the island, for that was silhouetted against the fading daylight in the southwest. He must have found the cache, packed his load, and started for home. Here he would fall victim to one of the weaknesses due to his bringing up with white men in Alaska, who generally overestimate the intelligence of dogs. Emiu had a naïve belief that his dogs could find the way when he himself could not. Doubtless he had sat down on the sled, shouted to his dogs and they had dashed off at high speed in the general direction of home. It could not have taken them more than fifteen or twenty minutes to reach the neighborhood of the camp but they must have gone by without stopping, not realizing where it was or possibly going on through mere excess of high spirits, for they had had a day's rest and were frisky. Our snowhouse was on the bay ice with no landmarks near except the starlit trail. Probably Emiu had gone by the camp several miles before he realized that he was lost. Then he probably became so excited that although the lantern stood on the snowhouse all night and he must have seen it often, he always mistook it for a star.

We spent much of the evening outdoors, shouting and firing off ammunition, noises that should have been heard for four or five miles in the frosty air and dead stillness. Towards midnight we gave up these attempts to attract his attention, except that we left the lantern aloft.

Then we went to bed intending to get up about five o'clock in the morning to pick up his trail and follow it. But as ill luck would have it, a storm sprang up during the night. It began snowing at perhaps four or five o'clock and by six or seven it was blowing a stiff blizzard, with a visibility of only a hundred yards. The previous evening we might have picked up Emiu's trail at the cache and followed it by lantern light, but thought this inadvisable since he would probably be traveling faster than we could follow. Furthermore, we had only one lantern and it seemed wisest to leave that as a beacon at the camp. Now the wind was blowing so hard that it was not possible to follow the trail by lantern light, and with the thick clouds in the sky, the flying snow, and the sun barely on the horizon at noon, we could do nothing till past ten o'clock. Alingnak and I then went out to search.

Alingnak went directly east from the snowhouse and I directly west, thinking that one of us would thus come across the trail. I zigzagged on my westward way so as to go over each bit of ground three times, but although I kept on several miles till I got to rough sea ice I could find no trail. When I returned to camp Alingnak was back. He had found the trail less than a hundred yards to leeward of the camp. Apparently the dogs must have taken Emiu right through the camp odors without giving any warning. But as Alingnak followed towards the land to the northeast the trail became more and more faint, for through the frequent blizzards of the winter the snow towards the beach was very hard in many spots with almost a glass-like surface. In the low places everything had been filled up by the blizzard that was now blowing. In spite of his best efforts Alingnak could bring back no information except that the trail led towards the land and could not be followed under present conditions of light. He thought that with the distinct shadows of a clear day it probably could be followed and that we could do nothing but wait for that hour to come.

That afternoon and evening we worried much over what might be happening to Emiu. He had been lightly clad and had with him no snow knife except his short hunting knife. He was not yet skilful in snowhouse-building, still we thought he would be able to erect a shelter for himself. The question was whether he might become so panic-stricken as not to do the sensible and obvious things.

The second morning dawned clear. By now we had come to the conclusion that Emiu probably had done what Alingnak and I agreed either of us would have done under the circumstances. A snowhouse located on the sea ice is the most inconspicuous of bases and difficult to find in a blizzard. But the black bulk of a ship, especially with the masts pointing skyward, is one of the easiest things found in dark weather. On his trip with Thomsen Emiu had been at the *Star* and must have known that she lay about twenty miles to the northward. I took it for granted that she was on the coast of the mainland and expected that any one following that coast would find her. It seemed most likely tc us that Emiu when he realized he could not find camp had proceeded to the *Star*. Accordingly, I struck out for the *Star* while Guninana and the girl maintained the camp, and Alingnak again took up the sledge trail.

That day was beautiful until noon and for the first time since October I saw the sun just clearing the horizon at midday. I did not walk directly towards the *Star* but zigzagged about, spending a good deal of time on ice hummocks looking around with the field glasses. In the early afternoon the weather suddenly changed into the beginning of a steady snowfall. I estimated that I was still some twelve or fourteen miles from the *Star* and now started directly towards her, walking rapidly. But the darkness came with strides more rapid than mine and I was still seven or eight miles away from where I supposed the ship to be when it became so dark that even cutbanks along the coast could not be discerned at more than ten or fifteen yards. I advanced and the weather got even thicker, and eventually one could scarcely speak of visibility at all, except that now as in any blizzard there was hope of seeing a body conspicuous as to its height, for no matter how heavily the snow may be blowing along the ground it is only in the most violent gales that it flies very thick at fifty or a hundred feet above the surface. My expectation now was to come in sight any moment of the lantern which Wilkins was to keep burning at the masthead every night until I should arrive.

On the assumption that the ship was on the beach my task was to follow the beach. In the darkness this was not easy. The only certain way was to zigzag at sharp angles, going first inland till you were sure you were on the land and then to seaward till you were sure you were on the ice. As usual under such circumstances, I frequently had to drop on my knees and dig with my knife until I found whether I was on ice or land. On account of this same thickness of weather I made the angles by which I turned landward and seaward so sharp that I probably had to walk four miles to advance one. But this is a game which always interests me, and although the advance was slow I did not find it tedious. I felt sure that eventually I must come upon the ship. Some of the keenest pleasures come from mere relief from discomfort and from a consciousness of one's fortunate situation as compared to a possibility that is close at hand and easily realized. I have always found that the pleasure of homecoming is keener the more difficult it is to find the way, and I looked forward with lively anticipation to my entrance into the warm camp. I knew Wilkins was there and I especially looked forward to finding Emiu safe and sound, an eventuality of which I had almost convinced myself.

When the weather was about as thick as possible, somewhere between four and five o'clock in the afternoon, I estimated that I was still over five miles from the ship. At the rate of one mile of advance for four miles of walking I must have been forging ahead at perhaps three-quarters of a mile per hour. This should have meant arrival before midnight. But midnight came and I had discovered nothing. I could not have missed her, so I kept on and on, until about five o'clock in the morning. I knew that by any sort of calculation I must be far beyond my destination.

I tried to recall everything Wilkins had told me about the *Star's* exact location, but nothing came to my mind except his statement, remembered clearly, "the *Star* is perfectly safe from ice pressure, hauled out in the shelter of an island which is near the mainland." This I had understood to mean that the ship was on the mainland sheltered from ice pressure by an island, but I now saw that it must have meant she was on the landward side of an island. Wilkins had not said how far this island was from the beach, and there was practically no hope of finding the ship until I should have weather clear enough to get visibility of several hundred yards.

The sensible thing to do was to stop where I was until the weather cleared and find the ship on the way back.

The best of all means for passing time is sleep. I felt neither sleepy nor tired, but I lay down on top of a little knoll with my back to the wind and tried to sleep, covering my face with my arm in such a way as to keep off the drifting snow.

A belief that has in the past handicapped polar explorers is that when you are lost in the Arctic you must not go to sleep. It is said that if you do go to sleep you never wake. This belief seems to be a complication of several beliefs. Not only is it thought that you will not waken as you become colder, but it is actually supposed that the cold itself tends to make you sleepy. I used to think so myself, for it was a part of my childhood education. Coming home in sleighs from dances and parties I used to imagine that it was the bitter Dakota cold, which I feared through having read so much about it in magazines printed in New York, that was making me sleepy when I now know it was merely that my usual bedtime hour had passed.

One of the commonest experiences of humanity is that when you are cold in bed you have difficulty in sleeping. The same applies whether you are sleeping on a porch "for the good of your health" with insufficient covers, or whether you lie down on an arctic snowfield in clothes that are not quite adequate to keep you warm when motionless. The first result of sleepiness or going to sleep is a slowing down of the pulse, which seems to be the proximate cause of general lowering of body temperature. People who are awakened from sleep by being too cold in bed become warm through mere wakefulness, providing the cold to which they are exposed is not too intense. That is exactly what happens to a person who lies down as I did now. The approach of sleep brings on a chill that wakes you up, so that I have never under such conditions been able to sleep more than a quarter of an hour or so at a time and more often I have not been able to go to sleep at all. With clothing a little warmer I could have taken longer naps.

As soon as one brings common sense and experience to bear on a situation of this sort it becomes evident how dangerous is the ordinary procedure of trying to keep awake at all costs. It has been the cause of probably dozens of deaths that I have heard about in connection with the whaling fleet at Herschel Island. Men would get lost, and, with the obsession that going to sleep would necessarily be fatal, would try to keep awake indefinitely. Their only means of doing it was to continue walking up and down. Through a semi-panic brought on by the fear of freezing, these men have walked faster than they should, becoming gradually more fatigued and frequently perspiring violently enough to make their clothes wet, thus changing the clothes into "good conductors of heat" no longer of much value as protection from the weather. Eventually the point of exhaustion has been reached, when sleep has been resisted as long as possible and has conquered at last. It is under such circumstances that a person may go to sleep never to wake again. But he who lies down without panic as soon as he feels tired or sleepy and especially before his clothing gets wet with perspiration is safer and better off the more naps he can take.

I spent perhaps an hour on my knoll, standing up every ten or fifteen minutes to shake myself and restore circulation before lying down again. Before daylight, flickers of aurora through the clouds showed that they were getting thinner and the snowfall was lessening, although on the ground everything was still thick with drift. I started south at six o'clock. Between four and six the wind had shifted from northwest to northeast and had partly died down, but by seven o'clock it was again moderately high, blowing thirty-five or forty miles an hour with visibility of dark objects about five hundred yards. With this visibility I made good progress, searching the mainland not so much for the ship which I now knew must be at an island, but for traces of people who probably would have been ashore abreast of her and for probable sledge trails leading from the land towards the camp. I zigzagged about half a mile out on the ice without having to make the angles nearly so sharp as the night before, so that I was now proceeding perhaps a mile and a half per hour.

At half past eleven in one of my several half-mile detours offshore I picked up a sled track going south. It was not over a week old, so I took it to come from Natkusiak's hunting camp at Cape Alfred. Much to my surprise this trail did not run parallel to the land but presently curved and took me inland. After half a mile of going I came to a campsite where two or three men had apparently spent the night. I could see that the dogs had been not over five in number and had been hitched to the sled tandem. This told me which of our teams it was, for we were driving about half of the dogs in inland tandem fashion, preferable, I think, for heavy freighting with large dogs. The others were driven in pairs as they are at Nome, a better method when speed is the first object. The trail led from this campsite straight out to seaward. Being interpreted by Sherlock Holmes methods, these and other signs showed that the men who had camped there had done so because they were lost in the evening and had the following morning been able to see the ship or some landmark which they knew. Otherwise they would certainly have followed the coast instead of leaving it at right angles. A few minutes' walk verified this conclusion, when the masts of the *Star* appeared through the storm three or four hundred yards ahead. This was at half past one, and I had left the camp near Bernard Island about eight the previous morning, twenty-nine and a half hours before.

What I am able to tell from experience about the effect on the inclination to hunger of the habit of absolute irregularity in meals should be interesting, for few have had any opportunities to make experiments in that field under natural conditions. I have mentioned that during my second year with the Eskimos I learned the habit of getting up for an all-day hunt without breakfast and eating twice within a period of three or four hours in the evening after coming home from the hunt. I made then the special conclusion that that particular arrangement was suitable and involved no hardship. I have since frequently gone from twenty to thirty hours without food, walking continuously or nearly so. I have never arrived at the end of such a walk with an appetite keener than a laborer feels when his meal hour has come or perhaps has been passed by an hour or so.

My welcome at the *Star* was warm and cheerful in every way. Food was brought at once but I could not begin eating until plans had been arranged for continuing the search for Emiu. He had not arrived and his absence looked serious. Wilkins was going to hitch up immediately and I think went so far as to do it, but the weather began to thicken again and the afternoon darkness was upon us already, so there was nothing profitable to be done till morning.

Wilkins had here the most comfortable and the most sensibly arranged of our three winter bases. He had never built an arctic camp before and had no one in his party with set views on just how it should be done. This left him free to follow his own devices.

The nearest analogy to Wilkins' camp is the common winter dwelling of the natives of northeastern Siberia, where small tents are pitched within other tents half a dozen times larger. Wilkins had first put up a wall tent. Then at each of the four corners he had placed a hundred-gallon iron kerosene tank and on top of these some boxes containing something I have now forgotten, sand or perhaps coal. These were the corner posts. With the yards of the *Star* and some pieces of driftwood he had made a roof well above the roof of the tent, covered it with canvas and then with snow. From the front door of his tent led a long alleyway with alcoves on either hand and in each alcove a dog. Another alleyway ran to a store tent, and the whole was under one snow roof. Seen from the outside everything looked flat, for it was covered with snow and there was little indication of a human habitation beyond ventilators and chimney, but inside everything was cozy. All the work of the camp could be done on a bad day without going outdoors. Without meaning that going outdoors in the Arctic even in a storm is hardship, still, it is an indubitable convenience to have everything under one roof especially as it saves a great many useless motions. The alleyways sloped a little upward, with the result that instead of the current of air being up from the dogs to the house, it was from the house out into the dog alley and eventually up through the door at the far end.

Early in the morning of the next day, a fine one, Wilkins and Martin started south to communicate with Alingnak and help in the search. They had gone only a few miles when they met Alingnak's party and Emiu with them. His story was this:

He had found the depot without any trouble, had loaded the pemmican and other things on the sled, and had started at top speed for the camp, expecting to be home in a few minutes and trusting everything to his leader dog. As Alingnak had discovered by the trail, the dogs had passed within a hundred yards of camp to leeward as the wind then was, but they had given Emiu no warning, passing right by. He did not realize that anything was wrong until he found himself in snow softer than it ought to be on flat sea ice. He then stopped and examined the ground, finding grass. At first he circled around trying to find the snowhouse; our lantern was in plain view but he must have taken it for a star. After about an hour's search he sensibly concluded to go back to the island and try a fresh start. He found the island and the site of the depot and set off again, feeling sure that this time he would find the house.

Probably he was completely turned around and drove in an entirely wrong direction although he asserted that he even afterwards felt sure he took the right one. However that may be, he soon found himself on land again, whereupon he went back to the island a second time and with the same result.

By now it was morning, cloudy, and the storm had begun. He stopped and waited for daylight, broke open a can of pemmican, fed his dogs and ate some pemmican and snow himself. When he knew that noon was approaching he commenced his search again but was unable to find either the camp or the island, for now the storm was very thick and he had great difficulty in making the dogs face it. Still keeping his head he allowed the dogs to curl up and sleep and tried to sleep himself on the drift beside them, which was a little warmer than sleeping in the sled, since it was nothing but a frame with a bottom eight inches above the ground, and the wind had a chance to circle around you instead of merely blowing over you.

He confessed to finding the next night tedious and by the morning of the third he must have been thoroughly scared, for he had obviously lost all the coolness and good sense that he had kept thus far, apart from the initial foolishness of trusting his dogs to find the way to camp. He was unable to give any clear account of what had happened the next morning but Alingnak told me that shortly after he and I parted he had climbed an ice hummock and seen with his glasses Emiu and his team inland traveling east. The weather was now clear, the reddening sky showed the direction of south, Bernard Island and Norway Island were in plain sight, both conspicuous landmarks that ought to have been familiar to Emiu, and even Robilliard Island to the northwest, not far from the *Star*, was in sight, and still he was traveling away from them, headed inland. In that direction lay no possible help; in fact, no human habitation before the *Bear* on the other side of Banks Island, and I know from knowing Emiu that he had no idea of how the *Bear* could be reached by going towards her overland or any other way than retracing his route to Kellett and thence around.

I have several times come in as close touch as this, but fortunately never closer, with the circumstances that lead to the apparently inexplicable arctic tragedies. When people are found who have been lost and frozen to death and when the signs show them to have done various inexplicable things, it is assumed that their minds were turned by extreme suffering and possibly the extreme cold. But Emiu said, and evidently truthfully, that he was never cold except for a moment when he awoke from his short naps, that he was not hungry, and that he had not suffered any discomfort except that of having been "lonesome."

Yet there he was traveling directly away in the clearest daylight. He even had good field glasses, and had he sat down and taken a careful look to seaward he could have seen our snowhouse, or if not the house the sled and the tethered black dogs on the snow. Alingnak, whose lungs are not the best, had great difficulty in overtaking Emiu, being compelled to follow him for miles. Emiu stopped now and then, looked around and rested, which made it all the more incomprehensible that he did not recognize the plain landmarks on the coast.

Apart from his trusting his dogs more than an ordinary Eskimo would, I do not think that Emiu's city training in Nome was at all responsible for his behavior. During the next day or two Alingnak and Guninana told me of several similar cases they had known among Eskimos. As for that, I have recorded in "My Life With the Eskimo" various instances of Eskimos losing their way in clear weather. I believe that their greater liability to losing their way than that of white men of outdoors experience is due in part to their lack of mental training and in part to the fearsome superstitions which lead them to become panic-stricken and confused.

## CHAPTER XLVI

### WINTER PREPARATIONS

DURING the early part of February everybody was mainly engaged in making preparations for Storkerson's ice trip northwest from the Gore Islands. My help was not needed, as the number of men to be usefully employed in such work depends on the number of dog teams. We had proportionately more men than dogs, and I devoted most of my time to recording folklore and linguistic notes.

The story of an expedition with as many branches as ours and lasting through five years is so complicated that it tends to spread itself over too much paper, and I am continually omitting details that would naturally be dealt with in the narrative of a year or two. These omissions I hope will lead to no serious misunderstanding of the main chain of events.

Except for the light it throws upon serious events of the future, I would omit mentioning here that at this time I undertook to transfer about half a ton of sugar from the *Star*, which had an abundance, to the *Bear* which was on short allowance. In polar exploration there is seldom trouble in feeding the men who have to work hard. On sledge journeys hunger, the best of all sauces, sweetens every sort of food. All experienced explorers have found this so and most have been led continually to the carrying of fewer things, those of preëminent experience, such as Peary, eventually coming to use the same things at every meal no matter how long the journey—in his case pemmican and hard bread with tea. He relates that no man ever complained of this fare after the first week or two and that the longer they used it the better they liked it. Our experience was exactly the same with a less varied and equally uniform diet. But this applies only to men working hard and for a purpose. Those at winter quarters who have nothing to do except prepare equipment for the work of others and keep the ship and camp in condition, are as difficult to please at table as clerks and bookkeepers at a city boarding house.

Our people at the *Bear* if left to their own tastes would have eaten from a pound and a half to a pound and three-quarters of sugar per week per man. But our supply called for less than a pound, if it was to last two years. We had a large supply of a preparation of saccharin known as "Saxin" and I had hoped to be able to use this in the sweetening of fruits, sauces and the like. But I found that the pure food campaign in the United States ten or fifteen years ago was in the minds of several who had been convinced by the newspaper misrepresentations of that time that saccharin even in the smallest quantities is seriously prejudicial to health. Accordingly I considered myself forced to the effort of transporting about a thousand pounds of sugar around the north end of Banks Island to the *Bear*.

Preparations for Storkerson's trip were not going entirely well. Natkusiak had in December accumulated at his Gore Islands hunting camp a huge quantity of meat and especially blubber, but then came the Christmas holidays and he had to go to the *Bear* to celebrate, not because he was lonesome but because it was Christmas. This gave half a dozen polar bears a chance to celebrate also and when he got back he found nearly all his accumulated stores either eaten or dragged away and lost. The weather was so dark that he had no chance to shoot the bears although he got a few glimpses of them prowling about. But the serious thing was that northwesterly winds prevailed for some time thereafter, pressing the heavy ice solidly against the land floe and preventing any open water sealing. Natkusiak might have been able to catch seals by the *mauttok* method, but this is always tedious and there was no level ice where it could be practiced. In fact, western and northern Banks Island are about the worst places for that kind of sealing. It can be successfully practiced only on the flat ice in bays or straits or on the clear level ice fifty or a hundred miles from land, but not easily in the confused and broken ice near shore.

While Natkusiak devoted himself mainly to this unsatisfactory sealing, most of the others occupied themselves in relaying sugar along the north coast. The going was bad, for the cliffs are precipitous into deep water, giving the currents and wind a chance to heap the ice against the land. Road-making with pick-axes was frequently necessary, progress was slow, and hauling heavy loads difficult. But eventually we had varying quantities of sugar relayed forward and deposited in hundred-pound bags at the Gore Islands, Mercy Bay and two intermediate points.

These depots also contained a large store of dog feed intended for Storkerson's teams on his way west, and kerosene and other stores wanted by us on the early stages of our New Land survey. Having the *Star* so far north we planned to depend on her supplies for man and dog food to take us up to about the first of April. When you have plenty of sledges and dogs at a base well supplied with condensed foods such as pemmican, and fuel such as kerosene or alcohol, time can be saved by depending on these rather than hunting in the case of operations within about two hundred miles of the base where no delaying for scientific work on the way is necessary. The ideal way then is to combine the condensed food method with the method of living off the country. You start out with your sledges loaded with food, and before that you have made, during the darkness when real traveling is not convenient, depots ahead in the direction you are going. When the light is sufficient, perhaps in February, you start traveling steadily, never delaying to hunt until food and fuel are nearly or quite at an end. The journey can then be extended indefinitely by transferring from condensed food rations to game.

By the 10th of February we began to expect Storkerson and by the 20th we were concerned because he had not arrived. The essential of a journey northwest from the Gore Islands was a start a month or six weeks earlier than ours of the previous year. Otherwise it would be better to concentrate all our efforts upon the vicinity of the newly discovered land, for mapping and other scientific work on the straits and enclosed seas between the arctic islands can be carried on well into the summer, whereas traveling on the moving ice should be finished in May and preferably in April.

I had decided to spend the next winter in Melville Island or farther north whether our ships could get there or not. It has always been one of only two or three serious privations that with our system of long sledge journeys we are separated from our supply bases much longer than ordinary explorers and are therefore compelled to do without books to read. On my first expedition I carried five books wherever I went; complete India paper editions of Byron, Shelley, Heine's poems in German, a volume of Icelandic poems, and Quain's "Anatomy." On my second expedition I had most of the standard books written about the Eskimos, whether in English, Danish or German. On the present expedition there was a thoughtfully selected and extensive library on both the *Karluk* and the *Alaska*, together with a general jumble of books presented to us. On each ship we had the new Britannica presented by its publishers, a hundred books, mainly scientific, presented by The Macmillan Company, and a hundred of more general range presented by the Frederick A. Stokes Company. On the *Karluk* was also my private library gathered through many years, for I had expected to remain aboard ship for four or five months each year and was hoping to do much scientific writing, some of it by aid of my notes of the previous expedition. All these books and manuscript materials were lost with the *Karluk,* and the contents of the manuscripts irreparably lost, for memory in most cases is so unreliable that when one's notes go the value of the work of months or years goes with them. I read now as new revelations the notes in my Eskimo diaries of ten years back, and continually find it valuable to check up my assertions by those records.

Most of the books originally on the *Alaska* continued with her, although several were sent to me with the *Star,* notably a valuable collection of ethnological works selected and forwarded by Jenness. I had now read all the books on the *Star* with the exception of a few which I arranged to have carried to Melville Island during the spring. Some of these I carried because I knew I wanted to read them, others merely because they were there and had not yet been read. They were Hedin, "Trans-Himalaya;" Harrison, "Philosophy of Common Sense" and "National and Social Problems;" Hegner, "Introduction to Zoölogy;" Ingersoll's "Lectures;" Comte, "Positive Philosophy;" De Morgan, "When Ghost Meets Ghost;" Sue, "Wandering Jew;" Hobbs, "Earth Features;" Mikkelsen, "Conquering the Arctic Ice;" Ellis, "Man and Woman;" and Boulger, "Botany."

The books in the list above I did not carry on the sledge trip of 1916 except the Hobbs, Hegner and Comte. On most of my trips I carried some book on mathematical astronomy. Puzzling out problems and figuring are in themselves good for passing as distinguished from killing time.

There was one book that never ceased to engage and amuse me. I was a small boy when Rider Haggard's "King Solomon's Mines" was published. I was brought up in the cowboy country, consequently handicapped in my power to enjoy Wild West stories, but I would swallow every yarn that came out of Africa. I don't know that I actually believed Rider Haggard's stories to be veracious histories, but I supposed them to be the sort of thing that easily happens in Africa, and every incident made as vivid an impression on me as if I had believed them to be literally true. It stuck in my mind for twenty years that wherever he went Sir Henry Curtis carried with him a copy of the Ingoldsby Legends.

I often wondered what sort of book it could be that so admirable a man as Sir Henry had chosen to be his constant companion. Somehow I managed to go through school and college without running into it or into any one who had, and I was beginning to imagine that the book did not exist any more than King Solomon's mines when one day I was looking around a bookstore and saw on the shelf the Ingoldsby Legends. I bought the volume and, like Sir Henry Curtis, I have carried it with me ever since.

# CHAPTER XLVII

## ESKIMO TALES FROM WINTER QUARTERS

WHILE most of the men were engaged in various preparations for Storkerson's expected arrival or in relaying sugar eastward, I spent my time recording ethnological information from our Eskimos. My Eskimo informants at the *North Star* were none of them over forty years old and their memories extended back perhaps about thirty-five years. In that entire time up to ten years ago they had known of three cases of insanity, and when they described them it appeared that only one was genuine insanity as understood by us. The other two were delirium accompanying protracted illness that eventually led to death. But during the last ten years there have been ten cases of insanity among the Mackenzie River Eskimos. Some of these insane people were descendants of native Mackenzie River Eskimos, others were immigrants from Alaska. The total population of the Mackenzie district, native and immigrant, is now less than a quarter of what it was twenty-five or thirty years ago. This shows the tremendous increase of insanity the last decade. Without resting the belief on anything but indirect evidence I am of the opinion that these recent cases are mostly the result of infections to which they have all been exposed since white men became numerous in 1889. I devoted one day at the *Star* to writing down all the information any of my housemates could give me concerning these insanity cases.

A day was devoted to inquiries into plural marriages where I recorded names and relationships of all persons concerned and available facts about their lives. I found that polygamy and polyandry seem to have been about equally common before the coming of white men and both together doubtless made up less than five per cent. of all marriages.

As to consanguineous marriages I now obtained some information that was new to me but which I verified later. For instance, should a man marry a widow who is then with child this child will be considered to be related not to the dead father and his relatives but to the new husband and to his relatives.

But another idea of consanguinity entirely foreign to us is the one that two persons of the same name may not get married. With us there are but few first names that are borne by either a man or a woman. But with the Eskimos there is no sex difference in names. Mamayauk is perhaps the commonest of all Mackenzie River Eskimo names and is known to me to be borne by seven women and three men. As most persons have several names not in use and are popularly known only by one, it is probable that there are a great many more Mamayauks than these ten. However that be, no two Mamayauks may marry each other. Guninana's brother, who has four or five names, was married to a Point Hope woman. A week or two after the marriage some one discovered that among their unused names they had one in common. The community was greatly scandalized, and though the couple were very fond of each other and apparently themselves inclined to disregard the prohibition, they were compelled to separate and each, for the time being at least, lost much of the good opinion of the community.

Eskimos are even less clear in their religious and social thinking than we are, and it is difficult to find for their practices reasons upon which all agree. But it was the belief of my informants, who had not philosophized about it before, that the reason two persons of the same name might not marry was that there had originally been but one stock of names. The name is with the Eskimos not merely a name but something like a soul, corresponding in a way to the European idea of a guardian angel.*

On another day I devoted the whole time to inquiries regarding physical characteristics which were considered peculiar to certain individuals as distinguished from most others. None of my informants had known an Eskimo with a dimple in the chin except Kupak, widow of Kangaktak, who was the first insane man I saw among the Eskimos and who died after about three years of insanity. Kupak was the daughter of a Cape Bathurst man, Kakianna, who was said also to have had a chin dimple. Conspicuous Adam's-apples were unknown to my informants except on white men and negroes. They had never heard of an Eskimo with one nor does the language contain any name for it. Hair that curls is exceedingly rare. Kupak, of the chin dimple, had hair that curled slightly and my informants had known two or three others.

At the end of my expedition of 1909-1912 a good deal of interest was taken by newspaper readers in our report of Eskimos of Prince Albert Sound, Victoria Island, some of whom had light eyes and other European-like physical characteristics not to be expected among Eskimos, the pure type among whom is considered in essentials similar to that of Chinamen—brown eyes more or less oblique, stiff hair, high cheek bones, and the Chinese type of brown complexion. During these days at the *Star* I got information on this subject which I shall summarize here together with various data of the same sort secured both before and later.

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* For a discussion of the Eskimo view of the name and the soul, see "My Life With the Eskimo," pp. 397-402.

At the Baillie Islands there was one family considered to be of peculiar physical type by the natives and particularly by some white men. My attention was first called to this family by Mr. Christian Sten, commonly known as Christian Stein.* This was at Shingle Point in the fall of 1906 when Mr. Sten was living there in his own house and I with the Eskimo family of Memoranna, commonly called by the whalers "Roxy." There were then living with Mr. Sten the Eskimo Tulugak with his wife, Arnaretuak, who was regarded by most of the white men as the handsomest of all the Eskimo women, doubtless because she most nearly resembled a white woman. She had an olive complexion lighter than many Italians, the type of slightly curved nose found in handsome Jewish women, and brown eyes not quite as brown as the Eskimo type and without slant or other Mongol suggestion. Her hair was only slightly lighter than the Eskimo black, if at all.

Sten told me that he had known Arnaretuak's father, who looked more like a white man than any Eskimo he could remember. He did not say that he had light hair nor make any reference to any particular European-like feature. This man had died at Cape Parry the previous year, according to Sten's account. I found out later when I came to live at Cape Parry that the grave was not on the Cape proper but on the neck of the peninsula at a point called Akkilinak, directly across the bay north from the whaler harbor at Langton Bay.

I heard nothing further about the peculiarities of this family until now, when we had with us on the *North Star* Uttaktuak, the wife of the Portuguese, Peter Lopez. Uttaktuak was the sister of Arnaretuak and the daughter of the man described to me as European-like by Sten. She told me that her father's mother had not belonged to the Cape Bathurst people but had come from

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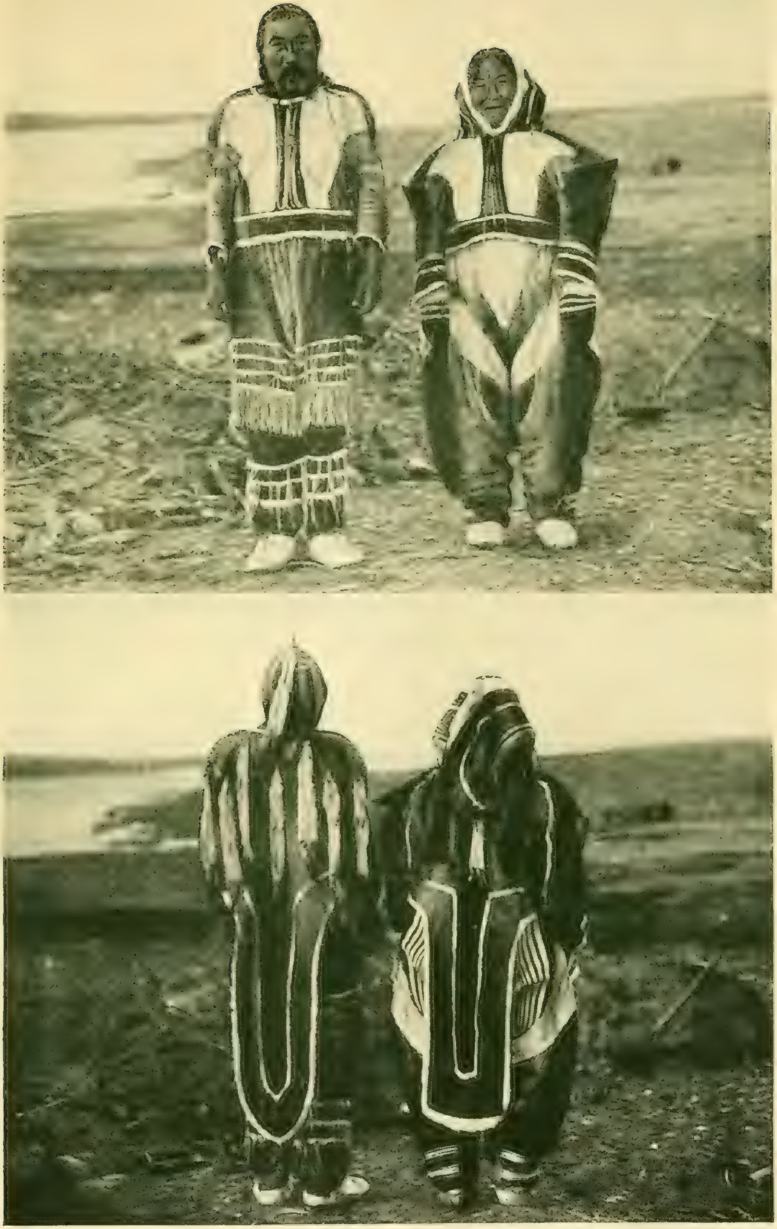
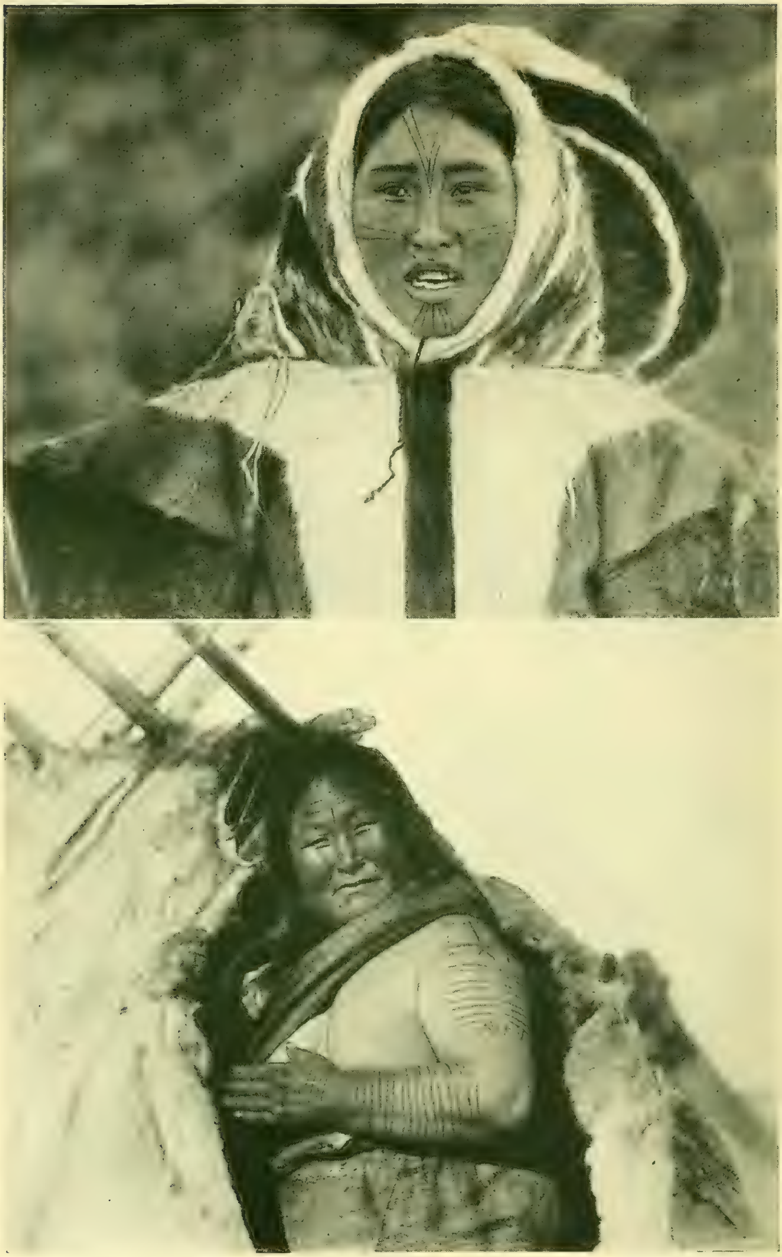
* For references to Mr. Sten, see "My Life With the Eskimo" and also Roald Amundsen, "The Northwest Passage," New York, Vol. II, p. 138 and elsewhere.



It Is Holiday Five Days Out of Seven Among the Copper Eskimos.



Tattooing—Copper Eskimos.

somewhere to the eastward, farther east than Darnley Bay, and that she had been said to belong to the Nagyuktogmiut. We learned in the year spent at Coronation Gulf that the Nagyuktogmiut proper are one of several groups in Coronation Gulf, as indeed can be seen from Richardson's narrative of his two expeditions in that region. But it is probable that the Mackenzie River and Cape Bathurst Eskimos grouped under the term Nagyuktogmiut not only that division but all divisions remote enough to be known to them only through hearsay. It may well be that Uttaktuak's grandmother came from Victoria Island instead of the mainland, and possibly even from Prince Albert Sound where the European-like characters are most in evidence to-day.

According to Uttaktuak, her grandmother had eyes about the color of mine, which are spoken of as blue. Both Uttaktuak and Guinnana, who was an adopted child of Uttaktuak's parents, remembered her distinctly. They also said that Uttaktuak's father, the man referred to by Sten, had blue eyes. Uttaktuak had two brothers and two sisters. One brother had blue eyes even lighter than mine, according to Uttaktuak. He died when four or five years old. The second brother had eyes also lighter than the Eskimo brown although scarcely blue. One of the sisters, Mamayauk, has eyes which are not of the typical Eskimo appearance, as I know both from observation and from common Eskimo opinion including Uttaktuak's, although they cannot be described as blue. The darkest eyes in the family are those of Arnaretuak and of Uttaktuak, who is the only one typically Eskimo in appearance in the whole family.*

My informants told me of two other people in the Mackenzie delta who have eyes considered by the Eskimos to be of European type and who are known to be of pure Eskimo descent—that is, not the descendants of any white men who have come to the country in recent times. One of these I had frequently seen and had never noticed any peculiarity of his eyes, taking him to be a typical Eskimo. I have since seen him and found that the eyes are indeed lighter than ordinary, but scarcely blue.

Unfortunately the circumstances now were such that I was unable to spend much time with the Prince Albert Sound Eskimos. The winter of 1916-1917 many of them visited the *Polar Bear* and were observed by members of the expedition. I have written reports on this subject from Hadley and Levi and verbal reports from others, recorded by myself. These reports give the names of seven Eskimos of various ages, from a total of about one hundred who have light eyes. It was the general opinion of my men, some of whom had associated with the Eskimos of Alaska for over twenty years, that there is a difference in physical appearance between the Prince Albert Sound group and that of the Alaska and Mackenzie River Eskimos, the difference being in the direction of similarity to Europeans. This is rather difficult to demonstrate and may easily be argued. Certainly there are many Prince Albert Sound people who are so typically Eskimo that they would pass unnoticed in Alaska.

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* For an account of the "blond" Eskimos (so-called popularly although named by me Copper Eskimos because of the prevalence of copper implements among them), see Index of "My Life With the Eskimo," under the head "Blond Eskimo."

I have emphasized in various places that although there have been hundreds of children born during the last fifty years on the north coast of Alaska and around the Mackenzie River of Eskimo mothers and white fathers, I have heard of only two cases of half whites with light eyes and have seen none. Extremely light eyes occur among quadroons where the mother is half white, but none of these eyes are really blue but would be described as "greenish gray." A very good example are the children of Mr. Storkerson. Mrs. Storkerson's father is a blue-eyed Dane, Captain Charles Klinkenberg, and Mrs. Storkerson has eyes as brown and hair as black as any Eskimo but features that are in general European-like. Mr. Storkerson is a blue-eyed Norwegian. Their three children have eyes lighter than their father's or grandfather's, not blue, however, but a greenish gray.

When I was at the hospital at Fort Yukon for several months in 1918 I made extensive inquiries as to the children of mixed marriages where the father had been white and the mother either a full blood Athabasca Indian or a half-blood. Through the interest of the late Archdeacon Hudson Stuck and Dr. Grafton Burke I gathered much hearsay evidence on this subject. No person from whom I was able to inquire had seen or heard of a half-Indian half-white child that had eyes of any other color than brown or "dark hazel." Of the children that were three-quarters white and one-quarter Indian the majority had brown eyes, but of those that did not have brown eyes every one had eyes described to me as of the same greenish gray sort as the eyes of Mr. Storkerson's children. One of these children I saw myself and by good light I ascertained that this was the color.

Whatever the explanation, it is certainly interesting to find that on Victoria Island, where no white men are known in historic times to have had contact with the Eskimos, there should be more instances of light eyes than on the north coast of Alaska after intimate contact for half a century between perhaps a thousand white men and two or three thousand Eskimos, this contact having resulted in dozens of permanent marriages where the grandchildren of the original mixed marriage are now growing up. No one who has any familiarity with the history of the North can imagine that these light characteristics have come in since the beginning of modern exploration or of whaling.

I have in fact pointed out* that the first visitor to Coronation Gulf, Sir John Franklin, describes the only Eskimo whom he saw as of European-like type, and that the second, Thomas Simpson, describes one of a small party whom he met as "of a distinguished appearance" and "much like a Scandinavian." If in 1826 Franklin saw a European-like Eskimo who was decrepit with age, and nine years later Simpson saw a middle-aged Eskimo who looked "much like a Scandinavian," it becomes obvious that modern European admixture is out of the question. As I have in previous books dealt rather fully with the origin of these European-like Eskimos I shall not go into it further here.

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* See "My Life With the Eskimo," p. 199.

## CHAPTER XLVIII

### THE NORTH COAST OF BANKS ISLAND

BY March 2nd it was evident that something was wrong with Storkerson, already several weeks overdue. Were he to come now any exploratory effort made to the westward from Cape Alfred would be abortive through almost certain failure to penetrate materially beyond the area explored by us the previous year. We started eastward to find out what the trouble was, reflecting that all our efforts that year would now have to be concentrated on the survey of the new land and exploration of the landlocked ice between the islands.

Thus were we for the second time robbed of the benefit of the *Star,* this time through no fault of the ship's but through failure in preparation and operation among the scattered branches of the expedition. My experience through the five years has tended to put lower and still more low my opinion of the value of ships in the sort of exploration we were doing. Many explorers seem to have been differently led into a greater desire for more perfect and powerful ice ships to carry them as far as possible. Should I have another expedition I should be satisfied with almost any kind of ship, such ships, for instance, as are used by the Hudson's Bay Company for carrying freight to Herschel Island and these certainly are not of any approved ice-fighting type. What I should want would be several young and adventurous men who would not be homesick and who would be willing to burn their bridges behind them, so far as ship support is concerned, when once they had left an easily accessible port like Winter Harbor on Melville Island. It is naturally difficult to compromise between two methods of doing a simple thing. The polar tradition was so strong that although I was free from its influence in theory, I did not in practice emancipate myself completely. In this I mean to shoulder directly about half the blame, but there was also the continued strong influence of my men, half of whom did not become entirely convinced of the value of our system until the year I am now going to describe.

The usefulness of the *Star* base was gone, except in so far as it had already contributed to our advancement towards Melville Island, and I arranged for its abandonment. The ship was safely hauled high upon the land. The remaining stores were either unspoilable, or of so little value that it did not pay to leave men for their protection. I was planning that a hunting party should spend the summer in Melville Island, killing game, sun-drying the meat, putting the fat into bags or otherwise storing it, tanning the skins for future use as clothing, and doing everything to prepare for wintering in that island in 1916-17 by a party of between fifteen and twenty men and thirty to fifty dogs. The ultimate aim was to have a base as far north as the 76th parallel, even should the *Polar Bear* fail to get there, for the commencement of our exploratory work of 1917. I left the *North Star* March 2nd with Alingnak and his family. All the others had gone before except Lopez, who would follow in a few days.

On the north coast of Banks Island everything was going well. Several seals had been killed, Castel had secured a large bear at the Gore Islands, Natkusiak and Emiu had killed twelve caribou fifteen miles east, and Wilkins twelve others ten or fifteen miles farther ahead. But the plan of hauling sugar to the *Bear* had to be given up, for we had counted on the teams that Storkerson would bring to move it from Mercy Bay to Prince of Wales Straits. These sugar depots were abandoned on the north coast—to play their part a year later in a tragedy undreamed beforehand and incomprehensible after the event.

Such a trip as ours from Cape Alfred to Mercy Bay, across Melville Sound and Melville Island, and to our new land and beyond, would probably make a more interesting entire volume than does the account of the whole expedition where the narrative has to take the character of a synopsis. On Banks Island itself we found as we advanced the novel topography of an unexplored country, for a glance at the map that we made and a comparison with the previous charts will show that there is little correspondence of physical features. No one appears now able to tell how the map of northern Banks Island found on the Admiralty charts was originally made up. The only explanation is that it was drawn largely from memory, perhaps several years after the *Investigator* passed it, possibly even after the crew reached England.

More interesting than the topography of a country are its resources, and those of immediate interest to primitive dwellers in it are the vegetation and game. We found caribou, never in large bands but everywhere sufficient, so that had we had no food with us we should have fared sumptuously. Where land animals are plentiful one needs no other proof of vegetation, and practically speaking we have no other, for we made no botanical observations or collections and can only say that the vegetation appeared to be that typical of semi-mountainous land in the Arctic. Nearly every second river valley showed some evidence of coal, and in certain ravines we found outcrops that were several feet thick and apparently of fair quality lignite, although the specimens examined were bleached through exposure. In other places it had much the appearance of wood, compressed into bricks and irregular fragments and burned with wood smoke.

Now I left Alingnak and Lopez with their families to follow behind with the poorest dogs and sledges, their sole task being to reach Melville Island before the break-up of the ice. There seemed no hurry, for caribou and ovibos are at their poorest in early summer and we were not looking forward to as good sealing as they found. The accounts of the British explorers had given us little idea of the comparative abundance of seals, probably for the reason already suggested, that they did not understand the methods of hunting them or the signs by which their presence is revealed. My own party—Wilkins, Natkusiak and Emiu—traveled slowly east along the coast. Castel and Martin had gone ahead to Mercy Bay with the hope of a possible contact with Storkerson. We thought of illness, of accident, and of nearly every explanation except the correct one.

In writing for Castel his instructions for the advance trip I had before me the Admiralty chart. McClure's ship had wintered two seasons at Mercy Bay, so I felt certain that this vicinity at least would be well mapped. With the greatest confidence I wrote that after rounding Cape McClure, Mercy Bay would be the second great bay encountered. Castel had with him a map from which he expected to recognize the bay without difficulty.

By March 22nd my party had rounded what we called Cape McClure, although it did not at all resemble the map, and had discovered for ourselves that the great bay charted just east of the cape is non-existent, unless you take a bay no more than a mile deep to represent one charted as twenty miles deep, with the bottom dotted in to indicate that it might be even deeper. When Castel met us on that day we were prepared for his report, which was that, failing to discover the expected first bay east of Cape McClure, he had traveled about as far as Mercy Bay should be from the Cape and had there found a bay three or four miles wide and ten or more miles deep. He traveled into this bay, following the west side of it according to directions, but failed to find the McClure monument and other remains of the *Investigator.* Ten miles in he discovered that it had the character of the mouth of a considerable river, filled with mud flats and low islands. This together with the absence of all traces of people convinced him that he was not in Mercy Bay. Nevertheless, he turned back, making a depot at the bay's mouth. He had already found the coast so different from what was indicated by the Admiralty chart that he thought it better to return for orders. He was also short of dog feed. There had appeared a band of six or eight caribou but he and Martin, being inexperienced, were unable to get them.

As the New Land survey could later be carried indefinitely into the summer we took plenty of time to explore the different Banks Island valleys for whatever we could learn. We incidentally killed many caribou and lived sumptuously, also feeding the dogs so well as to keep them in excellent condition. We were somewhat delayed by exceptionally bad ice conditions. There was much snow and a road had to be made occasionally with pick-axes.

At this time of year cow caribou in places where I have been on the mainland of North America would be entirely devoid of fat, but here they still had some back fat. We did not now kill any bulls but at other times they have been fatter in Banks Island than caribou are at corresponding seasons three or four hundred miles farther south. This emphasizes a consideration that should be obvious but is frequently overlooked, and sometimes the opposite is assumed. The reindeer is an arctic animal as truly as the giraffe is a tropical one. Either animal flourishes best in the environment to which it is particularly adapted. A fish does not prosper on land nor a cow in the water; a giraffe would probably find difficulty in maintaining himself in the temperate zone, and so apparently do northern caribou. At any rate, it has been our experience that in general caribou are fatter and appear to find conditions more congenial the farther north they go. This does not mean that they are more numerous to the square mile in the islands than they are on the mainland. That would be impossible because of the rocky character of the islands. Then, too, wolves become so numerous in the arctic archipelago that caribou are nearly exterminated from certain islands. In this respect there are no doubt years of ebb and flow in the caribou population. When the caribou become too few the wolves must move out or die of hunger, for there are no other animals in these regions from which a wolf might hope to make a living. There are a few ptarmigan and hares, but neither of these would go far to support a number of wolves. Now and then wolves would in certain islands kill a sick ovibos that had been separated from the herd, and occasionally a newborn calf when the mother was not watching. We have even seen a seal killed by a wolf. But all these sources of food put together would never sustain a permanent wolf population. When the wolves die from hunger the surviving caribou in turn have a chance to become more numerous, flourishing temporarily among surroundings congenial to them until a second influx of wolves brings their number down again.

I have not space to go into all the evidence upon which these conclusions are based, but will mention that we found a striking difference between our New Land at the time of discovery, when caribou traces were more numerous than we have seen them almost anywhere in the Arctic, and that same land in the fall of 1916 when the wolves appeared to be as numerous as the caribou and the caribou not one-tenth as numerous as a year and a half before. In May, 1916, a period intermediate between the plenty of 1915 and the scarcity of the autumn of 1916, we found an intermediate condition as to the number of caribou. This one example would not prove the hypothesis of ebb and flow in caribou population, but it is one of the bits of evidence upon which that theory has been adopted.

At Castel Bay, which I named after its discoverer, we found game especially abundant, with caribou tracks everywhere and bear tracks on the beach. We hunted inland one day to verify what I felt certain of, that this was the mouth of the great river which our party had been unable to ford on leaving Mercy Bay the previous summer and which we had been compelled to follow inland some sixty miles. We had seen from Mercy Bay the open water caused by the entrance of this river into the sea, so we had in that sense really discovered the river mouth in 1915. Although not as wide as Mercy Bay, Castel Bay is a conspicuous landmark that can be seen from the hills of Melville Island. It has the general appearance of a fjord with high land on both sides and conspicuous cliffs at either side of its mouth.

When we found that Mercy Bay was no more than six miles from Castel Bay it became the more astounding that the second bay should not have previously been on the maps. Surely some one from the *Investigator* must nearly every fine day have walked to the top of the land to the west of winter quarters where he could have had a view of Castel Bay and the river valley running inland.

At Mercy Bay in a letter awaiting me from Storkerson I learned the reason of his not coming to Cape Alfred. First Captain Gonzales had attempted to cross overland from the *Polar Bear* directly to Mercy Bay and had failed. Then Storkerson tried to make the same overland trip with a party of which Captain Gonzales was a member. It was now about midwinter, very dark and stormy, and the country proved mountainous. The Captain had been many years a whaler in the Arctic and had methods and ideas of travel which made him very uncomfortable, and he gave the narrative of this expedition much the sound of a typical polar venture of thirty or forty years ago. Tents had to be used, for snowhouses were assumed to be inferior, several food courses had to be cooked at each meal, and the cooking took far into the night, using up much of what should have been sleeping time. Hoar frost gathered on everything, the men's clothing got wet, and finally Captain Gonzales froze his feet. They had almost reached Mercy Bay when Storkerson was compelled to put the Captain in a sleeping bag and haul him all the way back to the *Bear*. Here endeth the second lesson!

The third attempt to get the sledges from Mercy Bay was successful. This time Storkerson followed the coast around. In several places and especially near Rodd Head they had great difficulty and were in some danger. Contrary to anybody's expectation the sea was open there even around Christmas time and they were compelled to travel on such dangerous young ice that they had many narrow escapes from falling into the water.

When Storkerson got home with the sleds he found the instructions that had been brought over by Thomsen. By this time repeated trips in the worst time of year had made many of the dogs sore-footed; others of them had died from the contagious dog disease which had already appeared some days before I left the *Bear*. Storkerson now sent Herman Kilian and Palaiyak with a message to leave for me at Mercy Bay, saying that conditions in the east were such that it would not be feasible to make the western trip unless I gave up entirely the New Land survey, and that he would assume that I preferred the New Land survey and would go ahead with it. Had Herman continued to the *Star* it would have saved us a great deal of worry and also accelerated our movements. But especially it would have saved their own party the hard overland trip back to the *Bear* for which they had not been properly outfitted.

From Storkerson's letter, with details filled in later, we learned about his survey last fall of the northeast coast of Victoria Island. A few days after his support party returned he made camp near a conspicuous headland. The next morning when he left camp he met a terrific head gale a few miles away, and his camp was so near he decided to return to it. The next day he tried again and met the same gale. Storkerson is an experienced man and the weather must have been exceptional, for he made several other starts and on each occasion turned back on meeting the head wind. This must have been a local phenomenon and the probability is that they could have worked through it. There are similar places known to me on the mainland. At Langton Bay, for instance, there is some years a local gale blowing steadily off the plateau to the south with the force of a hurricane. This storm is similar to a waterfall. The plateau inland is covered with heavy cold air, the sea in front of it is free from ice or covered with thin ice only, with consequent strong ascending currents of warm air. The cold air from the plateau flows over the escarpment to fill the space left by the ascending warm air. When you come from inland traveling north towards the coast of Franklin Bay, you notice a light breeze blowing at your back when you are six or eight miles from the edge of the plateau. By the time you come to the edge about three or four miles from the ocean and begin to descend, there is a terrific gale blowing that lifts pebbles and makes slivers of slate go like cartwheels over the snow, which is not snow in appearance but has been hardened and polished by the wind until it resembles ice. This gale may be blowing sixty or eighty miles an hour on the beach, but if you proceed north along the neck of the Parry Peninsula eight or ten miles from the cliffs you gradually walk out of it and find yourself perhaps in calm weather or in a light wind blowing in another direction.

In Storkerson's camp now the daylight had become so faint and conditions so unfavorable that he decided to return to the *Polar Bear*, leaving the rest of the work to be done another time. He conjectured that he had been able to finish about half of the space intervening between Wynniatt's farthest on the west and Hansen's farthest to the southeast, and he had discovered a lofty range of mountains running east and west inland. Storkerson has had the naming of all capes, islands and other features discovered on his survey of Victoria Island both at this time and when he continued it later. But to this range I gave the name Shaler Mountains, in memory of an unexcelled teacher and charming gentleman, Nathaniel Southgate Shaler, Dean of the Lawrence Scientific School of Harvard University, whose lectures on geology first opened to me some of its most interesting problems and had more to do than any single cause in turning my mind into geographic channels.

I had intended to proceed to the *Bear*, but I gathered from the tenor of Storkerson's letter, although it did not contain the actual statement, that he and his assistants would by now be up in Melville Island. So we crossed from Mercy Bay to Cape Ross where, sure enough, we came upon his trail and later found one of his camps. Here we killed a polar bear which had been prowling around for a day or two, eating the entrails of killed bears and other scraps he found lying about. The bear had touched neither a depot of pemmican and other provisions which Storkerson had protected by a heap of rocks in a ravine, nor the ovibos meat which had been sunk into a sort of well made with pick-axes into the top of an old ice hummock.

This meat depot was an ingenious one, and while no such depot is probably safe against a polar bear, came as near to safety as well could be. The well had been made two or three times as deep as was necessary to hold the meat, and on top of the meat had been filled with ice boulders which even a bear would have had difficulty in lifting up and rolling away. We were able to remove them only by cracking each one into several pieces before handling.

There has been among arctic explorers much speculation as to whether polar bear liver is poisonous. I have made many experiments to determine this and one of the most interesting ones was made here.

The belief in the poisonous nature of polar bear liver was probably picked up by early explorers as information from the Eskimos. Many whalers have told me that bear liver is poisonous but all of them have had it on hearsay from the Eskimos. When I first inquired from the Eskimos I gathered also that they meant to say it was poisonous. That was the interpretation I placed upon statements that it must not be eaten and that whoever eats it would become ill. When after years with the Eskimos I finally got reasonable command of their religious ideas and ceremonial language, I discovered that what they meant to say was that bear liver is taboo and that some misfortune, perhaps taking the form of illness or death, will come upon the eater of it as a punishment, somewhat as mediæval Christians might have expected illness or death to follow the profane use of the sacrament.

Asked as to the sort of results that would follow, they said that sometimes the man himself would die and sometimes some of his relatives would die within the year, but that usually the result was whitening of the skin—leucodermia, a disease common among Eskimos and also among the negroes of Africa and found, I believe, in all races. I remember particularly an old man three-quarters of whose skin had turned white. I was told by several persons, including his adopted son, that the old man had eaten bear liver when he was young. I asked the old man himself and he denied ever having eaten bear liver knowingly but said that he might have done so inadvertently.

As soon as I realized that the Eskimo idea of the danger of eating bear liver was of the taboo nature I began to experiment upon every opportunity. I never found an Eskimo who had ever tried the eating of liver, but I did get some stories of liver having been given to dogs which had later become sick, eventually losing their hair. The belief is that the livers of all kinds of bears are equally dangerous. During my second expedition I ate nearly every liver of thirteen grizzly bears I killed myself and of some others. Once I induced an Eskimo, Mamayauk, the wife of Ilavinirk, to eat two or three slices of fried liver, but the other Eskimos would not even eat meat that had been cooked in the same vessel.

On the present expedition my first experiment was near the northwest corner of Banks Island in the spring of 1915 when Andreasen, Crawford, Natkusiak and I were in camp. We had been short of food and had just picked up the depot of caribou fat made by Storkerson, Ole and me the summer of 1914 and buried in a stone-lined pit inland east from Bernard Island at the time when we gave up waiting for the *Star* and started south, the journey that resulted in the finding of the *Sachs*. It had been a mild and rainy fall and the caribou fat in the pit became damp and molded before the freeze-up. Certain kinds of molds are said to be poisonous. In our liver-eating experiment we fried the liver in this moldy caribou fat. I pointed out to the men that if we were to become ill the mold would be quite as reasonable a cause as the bear liver. We all agreed that the bear liver tasted even better than the seal liver, although the latter is considered by white men to be as good as calves' liver and is indeed the one part of the seal that is commonly eaten by arctic whalers. At this meal we ate a huge quantity of fat, so that this alone might have made us ill.

Some six or eight hours after the meal Crawford awoke with a violent headache in his forehead and eyes and soon suffered nausea, the vomiting continuing with about half-hour intervals for several hours. Ole was not ill and ate a moderate breakfast, but he began to feel headache soon after and before noon had become almost as ill as Crawford. Crawford's recovery was not quite as much earlier than Ole's as the onset had been, but both were nearly well by evening although they did not have good appetites. They described the headache as being the worst either of them had ever suffered. Natkusiak and I were not ill at all.

Just about the same time, but unknown to us, Thomsen and Storkerson made an experiment on bear liver. They have reported that after a supper of fried liver they both awoke sometime before their ordinary breakfast time with the most violent headache either of them had ever had. Vomiting continued all day and they were so sick that even the next day they felt weak and were with difficulty able to travel. They said that there was nothing wrong with the fat in which they fried the liver and nothing uncommon about the other food; in fact, there was nothing except the bear liver that could be considered a possible cause of the illness.

With these and similar experiments in the background, although none had led to illness except the ones I have mentioned, we took the liver of the bear killed when we landed at Cape Ross and made one more experiment. We divided it evenly. It occurred to me only later that there might have been an infection of some sort in a particular lobe of the liver without its covering the whole liver, and we should have eaten a slice from every part. This not being thought of, we were not in a position to say later whether one of us might have eaten from one part and another from another. The only difference we knew was that some of us preferred the liver well done and others preferred it a little underdone. It happened that those who preferred it underdone were the ones that became ill, but this may have been a coincidence.

We had the meal about ten P. M. and soon after that we went to sleep. At about four in the morning Emiu was seized with nausea which continued at half-hour intervals until noon, and he had a violent headache. Wilkins had a slight headache but said that he had had a similar headache for the two preceding days and believed it to be connected with a slight attack of snowblindness. He thought that if anything his headache was milder than yesterday. Castel had a slight frontal headache, not in the forehead and eyes as Emiu, but merely in the forehead back of the eyes. He had a normal appetite for breakfast and did not notice his headache until after breakfast and thought it might have been caused by the fumes of burning bacon when the cook left a pan unwatched on the primus stove while he went outdoors. At breakfast time Martin had a slight headache, but said that he had a similar headache the two previous days and that it had been no worse until the bacon fumes made it worse. But during the forenoon it gradually increased and at noon he became nauseated. The worst of his illness came about five o'clock. By eight Emiu had been for several hours free from nausea and was getting better when Martin was at his worst. The next morning Emiu considered himself fully recovered but Martin still had a slight headache and little appetite. Natkusiak had a slight headache that day but he frequently had such headaches. His appetite was normal and he had no inclination to nausea or any other unusual symptoms. My own appetite was not good, but I referred that to the fact that I had eaten four large meals of boiled ovibos meat the day before. I had a very slight headache which came on after the bacon fumes had filled the house and which appeared to me to be due to that cause.

Summing up our experience with bear liver, I should say that fully three-quarters of the livers ever eaten by me or others when I have been present have had no bad effect In fact, the percentage is larger, for I have now told of all the experiments which resulted in the marked illness of any one. The conclusion appears to be that certain polar bear livers are slightly poisonous while others are not. It is possible that thoroughness of cooking has a protective effect, although we are not sure of it. This was the last occasion when I was able to get any member of my party to make experiments with me. I myself have since eaten portions of six or eight livers with no ill effects. That I have not eaten liver more often is due partly to the fact that I like meat better and that I have tried the liver only for experimental purposes. A contributing reason for the fewness of these experiments hereafter was that on this occasion we lost two good traveling days in waiting for Emiu and Martin to recover, and time was now too valuable to risk losing much of it.

Storkerson had left no more than a mere note saying that he was proceeding with his party to the head of Liddon Gulf. On the third day after our arrival I had made up my mind to go to the *Bear* with a fast dog team to see what the situation was and to arrange with Captain Gonzales for the coöperation of the *Bear* during the summer. But just then a sled arrived from the north with Herman Kilian and Pikalu. Herman reported that Storkerson and Thomsen, Noice, Anderson, Illun, two sleds and nineteen dogs were now probably at the head of Hecla Bay on the way to the New Land. Herman was able to give further information, so that I was able to formulate written instructions for Gonzales and save the trip to the *Bear*.

Herman also brought sad news. This was the story of the first death on the northern section of the expedition since the *Karluk* tragedy. John Jones had been engaged by me from the *Gladiator* to be the second engineer of the *Bear*. At that stage we had no means of ascertaining the physical condition of the men except by their appearance and by what they told us. Jones looked the picture of health and seemed well qualified for his work except that he was a little too stout. He said that he hadn't had a sick day in years and that he wanted a chance to work off his superfluous weight.

Herman told me now that Jones had confided in some members of the crew that he had had heart disease for years and had been warned by a doctor that he might die suddenly. During the early part of the winter it became talk aboard ship, from what the men observed or from what Jones told them, that he could not sleep except on one side. If he turned upon his other side he would awaken in pain and apparently in fright. Late in December he complained for a day or two of not feeling well and would lie down in bed but always got up soon after to pace the floor. One evening before any one went to bed he had just lain down in his bunk when he gave a scream and started struggling out. Two of the men rushed to him, but he was dead when they got there. This is the version told me by Kilian at the time, although I have heard slightly different versions since. Jones was buried on a little hill near the winter quarters of the *Polar Bear*.

This was sad news to me even though it lacked the keenness of the personal sorrow I might have felt had I known Jones better. We had been together casually on the ship only a few days. He was evidently a faithful and energetic man and was well liked by those who knew him best in the *Bear* party. He came to us from the fishing waters of British Columbia where he had been engineer of the *Gladiator* before she was purchased by Captain Wolki. We have since been unable to get much information about him or to find any of his relatives, for the few papers he left gave no clew of value in that respect. We were not even sure that his name was John, for he signed it always "J. Jones."

A piece of news told by Herman that might have been of moment concerned Hadley. He had undertaken, among other things, the work of keeping the meteorological records, and he used to go out at eight o'clock in the morning with a lantern to read the wind gauge that was posted on the top of a neighboring hill. Hadley's favorite dog was Hans. Hans and Hadley were the only survivors of the *Karluk* in the northern section of our expedition. It was the way of Hans every morning to meet Hadley at the front door and go with him to the observatory at the top of the hill. He was the only dog allowed to be loose, the rest being in a barn where each had its own stall. This morning, which was dark with clouds as well as through absence of daylight, there was no Hans to meet Hadley at the door. This gave Hadley so much concern that instead of going to the observatory he began looking for the dog, calling him by name as he started to walk around the house to see if he might be lying in the lee of it. He had taken only a few steps when he almost walked into a polar bear that had risen on its hind legs to meet him.

I got the story later from Hadley himself, who told me that without any thought of which he was conscious he swung the lantern and hit the bear on the nose, shattering the glass, putting out the light and probably spattering the bear with kerosene. Then he turned and ran for the house without knowing how the bear received a surprise which was probably as great to him as it was to Hadley. Hadley should have gone in quietly either to get his rifle or to remain till the bear had a chance to get away. But instead he did the impulsive thing, shouting out that there was a bear outside the door, whereupon everybody scrambled for some sort of weapon and rushed out after the bear.

Hadley got out first, saw the bear momentarily conspicuous as he was going down over a cutbank towards the beach, and fired as he disappeared a shot that seems to have broken the bear's shoulder. When he got to the top of the cutbank the bear was down on the ice and Hadley fired again but without hitting. He realized that the bear was wounded and ran after him, firing occasionally although he could scarcely make out his position. After five or six shots he found his rifle empty, then exchanged rifles with Levi who was running next behind him, asking whether Levi's rifle was loaded and receiving an affirmative answer. Just then the bear ceased fleeing and turned to charge his pursuers. Thinking that he would be able to place a shot effectively, Hadley waited calmly with the rifle cocked till the animal was three or four yards away. His mouth was open and Hadley stuck the rifle almost into it as he pulled the trigger. But there was no report. The rifle had been empty.

There was time only to turn the rifle crosswise as the bear came down upon him. The animal's mouth closed upon the stock of the rifle and the canines went through Hadley's hand and nearly through the rifle stock, when the bear surprisingly merely gave one shake that tumbled Hadley in a heap on the ground, let go and started off again. He was followed and killed by the Captain and two or three others, while Hadley went back to the house to dress his hand. The wound looked bad at first and it was thought that bones were broken but this did not prove to be the case. The hand had apparently been grasping the small of the stock. On one side the lower canine went between two fingers and on the other between the phalanges, piercing the flesh without breaking the bone. The wound eventually healed with a scarcely perceptible scar.

Herman told me also that Storkerson had been trying to make use of our pemmican both for man and dog food and had found the same trouble with it that had been so serious for the *Karluk* party. We had two varieties of pemmican, designated as "man" and "dog" pemmican. The man pemmican contained some raisins and probably some cereal with lean meat and a little fat, and was not bad food if one had something else with it. But the dog pemmican seemed to be practically nothing but lean meat and salt. It was so salty that when two pounds of it were mixed with two pounds of hard bread and two pounds of unseasoned ovibos meat, the mixture cooked was as salty as any of our sailors could stand, and sailors are proverbially fond of salt. There was so little fat in it, too, that when four pounds of pemmican were boiled in a pot ten inches in diameter the fat that came to the surface was not sufficient to make a film over the water but merely scattered globules. If the dogs were fed on pemmican alone, getting a pound a day (the "standard ration" of Peary), they showed all the symptoms of starvation and were in addition difficult to drive because excessive thirst caused them to lag in the harness while picking up mouthfuls of snow. If more than a pound was fed the dogs became violently ill. They had been able to use the pemmican for the dogs only by feeding a little of it with fresh ovibos or caribou meat, supplying the necessary fat with seal blubber.* A pound of pemmican is enough for a small dog if it contains fifty per cent. fat. Our pemmican makers had failed us through supplying a product deficient in fat.

* See "Four Years in the White North," by Donald B. MacMillan, p. 73.

# CHAPTER XLIX

## WILKINS LEAVES THE EXPEDITION [1916]

WHEN he joined us Wilkins had done so as an employee of the Gaumont Company of Great Britain, to become photographer of the expedition, for we had made an arrangement by which the company undertook all our photographic work except that which any other member might want to do himself by preference. The sumptuous outfit of three moving-picture cameras and several for still photography had been lost with the *Karluk,* and I had been able to outfit Wilkins only with an old cinematograph camera purchased from Mr. John Clark, who had been cinematographer with Captain Pedersen on the *Elvira* and who sold it to me after the wreck of that ship. The camera itself was not good and the film was limited in quantity and of poor quality. Wilkins' valuable work as employee of the Gaumont Company was therefore over and he would have returned home the summer of 1914 had he not realized that if he failed us no one else would bring assistance to us in Banks Island.

There is no overestimating the value to the geographic side of our expedition of Wilkins' decision to carry on at that time, and his work in fetching the *Star* and taking her to the northwest corner of Banks Island had been equally good. The things he had done could not have been done so well by any other member of the expedition. But I was forced to agree with him that for the work which we now had before us, which was mainly sledge exploration, we had more men available than dogs or sledges. We discussed the possible necessity for his taking command of the *Bear* to bring her to Melville Island the summer of 1916, but agreed that her present crew were quite capable of doing that and would probably use their best endeavors in that direction.

It was decided therefore that Wilkins would proceed to the *Bear* and on arrival would discreetly make up his mind as to the intention of the Captain and the sentiment of the crew in the matter of trying to get the ship next summer to Melville Island. If there appeared to him to be any doubt of their using every effort to that end, he agreed to stay with the expedition another year for the purpose of bringing the ship north. But if it seemed to him that the Captain and crew would make a faithful effort he would proceed to Bernard Harbor and thence south and home with the southern section of our expedition whose outlined work was now finished.

Upon reaching the *Bear* Wilkins was to take astronomical observations to determine local time and carry that as rapidly as possible to Bernard Harbor so as to "tie up" our observations with those of Chipman and Cox of the southern section, who had better chronometers and every facility for greater accuracy of astronomical work. He would there use up the last of his film in getting as good pictures of ethnological subjects as possible. He would then go home with the southern section, which we expected would finish its work that year, arriving in Victoria and Ottawa perhaps in September. After reporting to the Government at Ottawa he intended to join the Australian forces on the French front, probably in the aviation section, for his moving-picture work before the war had been in considerable part done from aeroplanes, dirigibles, and balloons, giving him invaluable training in that sort of service.*

As we traveled northeast from Liddon Gulf following Storkerson's trail we had beautiful weather and from that point on had every opportunity to see whatever game there was on either side of the Gulf. But the topography is such that there are few places where animals can be seen from the sea ice unless they are within a mile of the beach. In spite of this we saw on the average half a hundred cattle per day, and from the top of Hooper Island on a clear morning a hundred and fourteen were counted. We killed none of these, as Storkerson had left for us caches of fresh meat here and there. We learned from him later as well as from Herman's account that the animals they killed on the east side of the Gulf were fat while those on the west side were lean. This seems to indicate that the vegetation is superior on the east side, yet those killed on the west side were only four and there may have been some accidental reason for the difference. We saw no caribou, perhaps because they are light-colored and inconspicuous as compared with the ovibos. These huge black animals can be seen, whether on a snowfield in winter or against a green hillside in summer, as far away with the naked eye as caribou with the best six-power glasses. In hunting I usually carry two kinds of glasses, six-power for use in twilight, on cloudy days, and when the wind is blowing so hard that twelve-power glasses cannot be held steadily. The higher power is used when conditions of visibility are ideal and with them I have seen caribou at distances of eight or ten miles. I have never seen ovibos at that distance because I have never looked for them where the topography allowed it, but I imagine that they could be seen for twelve or perhaps fifteen miles.

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* Wilkins later carried out this program exactly. He served two years at the front during which time he was promoted to be Captain, was several times mentioned in despatches, and received the Military Cross.

We crossed the isthmus from Liddon Gulf to Hecla Bay in the vicinity of Point Nias. There was either miscalculation on our part or a fault in the chart, for Sir Edward Parry's monument of 1820 described by McClintock as still standing and conspicuous in 1852 should have been visible but was not. We found here a small depot which Storkerson had left for the return party, and a brief note showing that he was about a week ahead of us.

At Cape Fisher we found McClintock's conspicuous monument —a barrel on top of a rock, the rock itself on a hilltop against the skyline. The barrel was filled with gravel into which was stuck a splinter of driftwood six or eight feet long The heavy iron hoops were not much rusted, though the top one had loosened and was hanging on one edge of the barrel. We could not conceive the use of a heavy sheet-iron box resembling a modern camp stove, which had no holes in it beyond an opening at one end. It is strange that when transportation was such a problem heavy articles like sheet-iron boxes and the most massive barrels should have been hauled such a distance. Apparently the intention must have been that these packages should protect the contents from animals, but in a rocky country a better protection could easily have been made out of stones that did not have to be brought along.

We did not pry into the barrel at this time but on a later visit Storkerson found in it the following record:*

> *Cylinder, buried 10 feet true North from this Cairn.* None.
> *Traces.* None found.
> *Party.* Returning to their ship. Have searched this coast to longitude 118° W in latitude 75° 24′ N. Also an adjacent coast from longitude about 118 (?) W, latitude 75° N to longitude about 116°, in latitude 77° 24′, also islands off it up to 77° 50′ N. Have been absent on this..........4th April,........the day we left our ships......records have been left in several places.
>
> F. L. McClintock, Comndt.

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* The date of the record is not clearly legible—perhaps July 8th, 1853.

Beyond Cape Grassy we found that Storkerson had struck away from the land in a direction 22 degrees west of north which is the proper course for Cape Murray, the point where we came ashore at the time of our discovery of Borden Island. But four miles from Cape Grassy we found a place where the sledges had stopped briefly by the way, to judge by the tracks of men and dogs. After this the trail led for eleven miles in a direction 20 degrees east of north. While it continued in this direction I thought Storkerson must have made up his mind to strike for the south coast of the new land with a view of exploring the east side instead of the west, and this disturbed me for I thought the seaward side should be explored while the weather was still cold, leaving the land-locked ice along the east coast to be traversed later in the season. But after eleven miles of this course the party had turned back to their previous one, heading again for Cape Murray. I learned later that the reason had been one of the remarkable mirages or "appearances of land" that have deceived so many arctic explorers. Storkerson told me later that the fog had suddenly lifted, showing a land with bold cliffs apparently only fifteen or twenty miles away. This surprised him, but after consulting his companions, both Eskimo and white, and studying the land carefully through the glasses he made up his mind that they could probably reach it that day and that he might as well strike it first at this cape and follow it westward. But for two or three hours as they advanced the land kept receding and getting lower, until finally without becoming obscured by any fog or mist it sank beneath the horizon as if it had been some heavenly body setting.

In general my polar experience has been nearly free from the hardships that most impressed me in the books I read before going North. For nine polar winters I have never frozen a finger or a toe nor has any member of my immediate parties. My only experience was on my first expedition when I once got my feet wet in an overflowed river with the temperature perhaps forty below and froze one of my feet enough to raise a slight blister. I have now forgotten whether it was a heel or a toe. Since then I have never had a frostbitten foot or hand except for an occasional nip on the wrist when my mittens have not met the coat sleeve properly. These have never been more serious than a burn from a drop of grease spattered from a frying-pan. My face gets slightly frozen nearly every day but one gets so used to that that it calls for no comment, and my diaries do not show more than one or two references to it per year. Such frostbites are no more serious than sunburn. The same has been the record of all my companions whether Eskimo or white for the ten years in the Arctic covering my last two expeditions, with the exceptions of freezing of the feet by Captain Gonzales and a frozen heel by Knight on his trip across Banks Island with Thomsen in midwinter. Knight had an idea that his feet differed from those of others in being much warmer and would perspire if he were dressed like the rest of us. Fortunately the freezing was not deep though it easily might have been. It had the bad result of keeping Knight out of the spring work of 1916 but the good result of teaching him how to dress and of serving as a warning to any others.

So we may well consider that our section of the expedition was remarkably free from the typical ills and accidents of the polar explorer. But just north of Cape Grassy I suffered the first and thus far the only serious accident of my career. We were traveling at the rate of about five miles an hour through some rather good going when my left foot broke through a perfectly ordinary crusted snowdrift, giving me a twinge in the ankle. We should have stopped right there and camped or I might have ridden upon the load, for when the going was so good the dogs could have made easy progress. But I foolishly kept walking for two or three miles, the foot getting continually worse. I then rode on the sled for three or four miles till we came to Storkerson's next snowhouse. We were in the habit of covering two of Storkerson's marches in one of ours, taking a noonday lunch in one of his snowhouses and camping in the next, thus making about thirty miles a day against his fifteen. But this time we camped where ordinarily we should have made only a noonday halt. An hour after camping the pain in the foot had become extreme and I could not flex the ankle joint at all.

The next day I rode on top of the sled in the forenoon, and found it about the most unpleasant experience I ever had. It was not only difficult and uncomfortable but there was the continual mental distress of being no longer useful but a handicap. The day after that we transferred about half of the load from one sled to the other and I wrapped myself up inside the sled, traveling blanketed and propped up in the manner of white men in western Alaska.

This day Emiu discovered a small island lying eight or ten miles to the right of our course and, as we judged, perhaps ten miles southeast from the middle of the east coast of Emerald Isle.

We were near Eight Bears Island when we met Thomsen and Illun with a light sledge traveling south, who said they had left Storkerson, Charlie and Noice the day before at Cape Murray with one sled and nine dogs. They had killed five caribou but it appeared to them that the caribou were fewer and the wolves far more numerous than the previous spring.

I sent Emiu then with his fast dogs and empty sled to overtake Storkerson, asking him to wait where he was till we caught up. On May 3rd we arrived at Storkerson's camp at Cape Murray. Since leaving Cape Ross we had traveled so strenuously that the dogs had lost a good deal of flesh and were tired in spite of their abundance of food, so we stopped at Cape Murray three days to rest. Meantime I formulated plans for the year.

The central idea was that Melville Island must be next year's base of operations, whether the *Bear* got there or not. Gonzales was to bring the ship there if he possibly could. My instructions specified that under no circumstances was he to move the *Polar Bear* south from where she was at Armstrong Point. If he could not come north he was to leave her where she was. If his best efforts did not enable him to reach Melville Island he was to communicate with us as soon as Melville Sound froze over, by sledges sent to our winter base which would be on the east side of Liddon Gulf.

The families of Lopez and Alingnak, now probably in Liddon Gulf killing seals, later on were to kill ovibos and caribou as these became fatter, and to dry as much of the meat as they could. I would send Storkerson back from Cape Murray with instructions to proceed till he met our hunters in Liddon Gulf. He was to stay a few days to get them located on that part of the east side of Liddon Gulf which he found most suitable for wintering. He would then proceed to the *Bear* with Martin and Illun. After delivering the instructions to Gonzales and making sure that everything was clearly understood, he would take his family and perhaps some other Eskimos back to Melville Island where during the summer he would be in charge of the meat-gathering operations and other preparations for wintering. The fuel problem would probably be the most serious and he was to take particular pains to save all fat, emphasizing therefore the seal hunting. But he was to look around also for coal mines so that if one were found we could use all our fat for light and food. On arrival back in Melville Island from the *Bear* he was to decide whether time would allow him to recross Melville Sound to the north coast of Victoria Island for the purpose of finishing his interrupted survey of the previous fall.

I wanted Thomsen to spend the summer in Melville Island but he was reluctant to do this unless he might go to Cape Kellett to fetch his family, and this was agreed. I have always had a prejudice against making long journeys entirely alone, but we could not possibly furnish Thomsen with anybody to go back with him and he was eager to make the trip alone, so I consented to it. The understanding was that he would return immediately to Liddon Gulf with his family. He felt sure that the time was ample for doing so, but if he could not make the return journey he was to spend the summer at or near Mercy Bay, perhaps at one of the already discovered coal mines. This is an excellent hunting country for caribou on the land and polar bears and seals at sea, so that he would be able to put up an abundance of food. Some of the meat he would dry for sledge provisions, and with seal oil for fuel he would come across to Liddon Gulf about or a little after the New Year.

During the fall of 1915 Wilkins had taken a number of zoölogical specimens, both birds and mammals. The skins and skeletons of these were at the *Star*. Thomsen was to pick up a sledge-load of these and take them down to Kellett, where Captain Bernard would box them up for shipment should a whaling ship come in. We had some hope that Captain Theodore Pedersen of the whaler *Herman* would bring our mail to Kellett and possibly some things shipped in by the Government. I had given Bernard explicit instructions, which I also impressed on Thomsen, that should mail or supplies be landed by the *Herman* or any other ship at Kellett during the summer of 1916 Captain Bernard was to make no attempt to bring them to Melville Island, for I considered his resources wholly inadequate for doing so with safety. We hoped for some scientific instruments which we needed badly, letters from friends are always a delight, especially in the Arctic, and instructions from the Government might be of importance. But Melville Sound does not freeze over until the middle of winter. The dark season from November to February is difficult to travel in and only the latter half is suited for a trip to Melville Island, as the ice bridge between the islands is not available before late December or early January, while a party leaving Cape Kellett with the gathering daylight of late January would not arrive in any case until after our exploratory parties would be already on their way northward. Thomsen must therefore return to Melville Island immediately, spending only a day or two at Kellett; for otherwise he would fail to get back to us in time to be of any use in next year's exploratory work.

Castel, Emiu and Natkusiak I would take with me for some distance and send them back in ample time to get to Melville Island before the break-up to help Storkerson during the midsummer and autumn in the hunting and in the making of dried meat.

In view of my sprained ankle I had to consider returning to Melville Island, entrusting the advance work to some one else, perhaps Castel. I concluded, however, that there was no need for my doing so, since we had provisions to last at least thirty days. I had always heard that a sprain required about a month for recovery and I expected to ride in the sled for that time. This would give a sound foot again by the time it was needed for hunting, and anyway seal-hunting in the summer consists of crawling and wriggling along the ice and that can be done by a lame man as well as by a sound one. For the time being Natkusiak could hunt seals for us. Emiu, who had never hunted them on the summer ice, was eager to learn and so were all the white men, and I had no doubt that if I should be unable to hunt they would manage all right. We had with us more ammunition than usual, so economy in that respect was not imperative.

Besides two ordinary rifles and a hundred and fifty or two hundred rounds of ammunition intended for the use of the support party, we had for the advance work three Gibbs-Mannlicher-Schoenauer rifles and five hundred rounds. Two rifles were carbines which we carried ready for use in light canvas hunting cases on top of the sledges. The third was a long rifle equipped with a telescope sight in addition to the ordinary sights, and this was carried inside the load in a heavy steel and wood case. I have told how it was our custom on nearly all trips to carry one rifle in reserve, protected as carefully as possible from injury. The case this one was carried in weighed ten pounds, two pounds more than the rifle it protected.

Various letters to Storkerson and other officers of the expedition were not ready until May 7th, a delay we did not mind while the tired dogs were resting. On that date Storkerson, Martin and Illun started south. Two days before (May 5th) Castel, Noice and Charlie started north along the coast to begin the survey beyond the most northerly point of land seen by us the previous year. They had a team of dogs that were fresh because of several days of rest taken while Storkerson was making astronomical observations at Cape Murray and then waiting for me to catch up after Emiu overtook him.

May 5th I sent Natkusiak inland to hunt. The hunting move was to inspire his interest, and to have him find out what sort of country it was. He reported that for the first five or ten miles—he is a poor judge of distance and never could learn to estimate in miles—the land was generally level. It was in most parts deeply covered with snow under which there might have been vegetation, for snow catches in grass and naturally it is the barren spots that are blown bare of snow in the winter storms. The bare patches were usually red mud or sand and gravel on the tops of small ridges. On this land there were no caribou traces, confirming Natkusiak's assumption that vegetation was probably scarce; but fifteen or eighteen miles inland he came to rolling hills and later to *kimirkpait* (singular *kimirkpak*), the Alaska Eskimo name for hills that are somewhat angular in appearance and have a height of from four to eight hundred feet. Here caribou traces were numerous and vegetation abundant. The caribou had been in small bands, the largest one of fifteen or eighteen animals. Thick weather came on and Natkusiak did not find any caribou, but he secured what I wanted—the information as to the character of the land. We could hardly have afforded to delay to fetch meat at this stage from twenty miles inland so it was lucky he killed none.

In general the rest of the west coast of our new land fitted well Natkusiak's description of the territory back of Cape Murray, and corresponded also in topography and scarcity of vegetation with the west coast of Prince Patrick Island. That both Prince Patrick Island and ours are well supplied with vegetation inland and to the east, while comparatively barren along the west coast, may be due to geological reasons, although possibly due to the raw winds which in summer bring continuous fogs from the open water to the west.

The season of fog was beginning, and for the next month or six weeks we had no day that was wholly clear and on an average not one in seven that was satisfactory for good surveying, even of the rough type we were attempting. My aim was to average ten miles a day. At this speed fairly good mapping can be done on a scale of an inch to the mile, if conditions of visibility are favorable and the coastline pronounced enough so that one can see at a distance the distinction between land and sea. The coastline here was low, which gave some difficulty and is a source of much inaccuracy in our survey. But the main trouble was with the fogs. Like our predecessors who surveyed Prince Patrick Island, we had to choose between doing work that approximated only roughly to the facts and doing none at all. Obviously, remaining in camp six days to wait for the seventh one of passable weather would waste a whole season in the survey of one or two hundred miles of coast. When the time comes that these lands are more accessible and more highly valued a re-survey will be in any case necessary. We aimed merely to do such preliminary work as will place our lands on the map about as accurately as arctic islands previously discovered and surveyed.

The day after Storkerson left southbound, Natkusiak, Emiu and I started north with two sledges, one bearing me as a passenger. We made over thirty miles that day and overtook Castel's party at their third camp. As we came up Noice was just finishing, with the assistance of Charlie, the first snowhouse he had ever built. It had been a slow job for him but it was very presentable. He had had a good apprenticeship in assisting Thomsen, perhaps our best snowhouse builder, who had made all the snowhouses on Storkerson's trip north. Still, the fact that he built a good house the first time he tried makes it fairly clear that those must be wrong who consider that there is something mysterious about the ability.

Castel was not at the camp, having caught sight of three caribou and gone in pursuit of them. In a little while he came home, saying they had seen him and run away. Because of inexperience he had underrated his ability and overestimated the distance to which frightened caribou would run. The weather was clearing a little and we could see from the camp where the caribou were grazing. Natkusiak and Emiu went after them and got two out of three.

Spring is the worst of all seasons among arctic islands. The total snowfall of the year would probably not amount to more than two or three inches of water when melted, but most of this falls in the form of snow, mist, or fog between late April and late June. As we advanced along the coast of the new land we had to contend at all times with these unfavorable weather conditions. One of our teams consisted of big, long-legged dogs, another of smaller dogs that were used to soft snow, and the third of Eskimo dogs from Victoria Island that were unused to it. It may seem strange that Eskimo dogs should be unused to so typical a condition as the soft snow of spring, but the point is that Eskimos do very little traveling at that time. The big dogs waded through the snow without difficulty, the small Alaska dogs struggled along bravely and did their best, but the Eskimo dogs appeared bewildered and floundered helplessly through the snow that came to their bellies.

The day after we overtook Castel we were traveling east when the weather cleared a little, and we saw the Leffingwell Crags straight ahead and nothing but ice horizon and sky to the south. Cape Murray was therefore on an island twenty or thirty miles in diameter, separated from the larger one to the east by a strait four or five miles wide. When we realized this we headed northeast and were soon following northward the coast of the larger land.

The weather was now particularly bad and for day after day it was seldom that a hill six miles away could be seen, while more often the visibility was six hundred yards and occasionally sixty. When it was at all clear the two heavy sledges used to cross the bays from point to point, while the light sled that was hauling me went in towards the bottom of the bays and crossed the necks of lowlands between them. In the evenings Castel and I compared survey notes and were able to get a much better idea of the land than if all of us had followed one course. We gradually realized that we were in a big bay for we followed the land first west, then southwest and south until we got around the end of the peninsula, when on May 15th we found ourselves again on the west coast going north. During this time we got little idea of the topography inland but what we saw consisted of low, rolling hills.

Continual fog and clouds with diffused light caused considerable suffering to the eyes and consequent delay at this time. The loss of most of our amber-colored and other snow glasses with the *Karluk* might seem a lesser handicap, but as a matter of fact there was scarcely any piece of equipment we so often longed for. Our one good pair of goggles had to be used by the man who walked ahead to pick trail. There were one or two inferior blue or green pairs and the rest of us had to use eye protectors of the Eskimo type, made of wood with a slit for each eye about big enough for a silver half dollar. These cut down the light enough to protect from snowblindness but they also limited the field of vision. If you had your eyes on the horizon you could not see what was immediately in front of you, for you had to look directly down towards your toes to see where you were placing your feet. But this was as bad as looking too far ahead, for it gave insufficient warning of your approach to ice hummocks and other obstructions. Sitting in the sled I needed no protection, for I could close my eyes whenever I wished, and I was the only member of the party exempt from snowblindness. Occasionally we had to stop two or three days at a time when more than one member of the party was severely affected.

The sprained ankle had been troubling for more than three weeks and was still unfit for walking. I had expected to be incapacitated a month but had looked forward to greater signs of improvement than this. I began to feel more and more that I was a pretty serious handicap to the party and finally decided to go no farther than Cape Isachsen on the northwest corner of Ellef Ringnes Island where we would get observations for time, and then turn back leaving the advance work to a party of two, Castel and Noice.

Natkusiak had been killing occasional seals and it was about this time that Emiu killed his first seal by the *auktok* method. He was very proud of himself and his success made me feel easier, too, for hunting is a matter of combining skill with patience and long hours of work. Patience and willingness to work indefinitely Emiu had, and as soon as he became skilful he would be an ideal hunter.

We now had provisions enough to outfit two men and nine dogs for about thirty days if the remaining three men and two dog teams depended entirely on game, and this accordingly was the arrangement.

I gave Castel and Noice practically all the provisions. They were to follow the coast of our new land northeast and east, but whenever it began to run south of east they were to leave it and strike directly for Cape Isachsen. Here they were to take astronomical observations and leave a record for us, giving a synopsis of their proceedings and a copy of their observations. They were then to strike north, should they find landfast ice in that direction, until they discovered new land. But should they find no landfast ice but instead a floe edge running in the direction of Axel Heiberg Island, they were to follow it as far as appeared safe, having in mind that they were to be back at the northeast corner of Melville Island by the first of July. Their provisions would take them that far, and although both were inexperienced in hunting I had no doubt that when they once got back to Melville Island they would secure ovibos, for no one can be so unskilled or badly armed as to be unable to do that.

Nine dogs were in excellent condition and these we gave to Castel's party. They left us the afternoon of the 21st, following the land eastward, while Natkusiak, Emiu and I struck northwest and camped at the shore floe which was here some six or eight miles from land.

Hunting conditions were bad both as to thick weather and unfavorable ice. Natkusiak and Emiu hunted eight or ten hours without seeing seals. Thinking the opportunities might improve, we started next morning following the floe edge northeastward. After five miles we came to level ice of this year's origin and felt sure that the sealing would be better. We camped and Natkusiak and Emiu hunted four hours without success, but after supper Emiu went out again and this time got a seal.

While he was gone and before I knew he had been successful I had come to the conclusion that the food question was getting serious and that I had better see if I could hobble around and do something. One can usually convince himself of what he wants to believe, and I succeeded in concluding that if I walked carefully on snowshoes I should be prevented from slipping or twisting my ankle and that doubtless going half a mile would not affect me. Then if I saw a seal I told myself that I should have to crawl, anyway, and in so doing could not possibly be hurt. Here is the account of the adventure that followed, copied directly from my diary:

"I intended to send Charlie to the water to sound, but took a walk first to an old ice cake I saw over a ridge and took to be a quarter of a mile away. Walking carefully on snowshoes over level snow, I did not seem to be hurting my foot at all. The cake turned out to be extraordinarily high and over two miles off. It gave on near view the effect of a many-knolled mountain, and each of four successive hills that I took for the top proved lower than the next beyond. The highest was probably between fifty and sixty feet over the sea. From this knoll I saw the main lead of open water trending NE two or three miles west, with many minor cracks nearer. There was also a series of patches of open water trending easterly a mile or two north of me—I was two miles NE x N from camp. To the west I saw a seal about a mile off, and south of it Natkusiak and Emiu who could not see it for the rough ice. As the ice seemed level I decided to try for this seal—it is a long time now since I have been anything but a burden. On setting out for the seal I had an adventure that has several points of interest.

"On descending in the direction of the seal I found a three-foot tide crack that, in my crippled condition, I could not safely jump. I turned to follow one of the low ridges near the foot of the hummock about parallel to the tide crack. The goggles I had were made of caribou hoofs by Natkusiak in Banks Island—on the theory that they are making the hardest trip, I let Castel and Noice take two of the three good goggles we have, and Emiu uses the third because he goes ahead usually and therefore needs them. These 'horn' goggles, as I wear them, do not allow a view right in front of one's feet. I am not sure of what I was thinking, but probably of finding a crossing of the tide crack that would not expose my foot to a wrench, when I found myself falling.

"As there is a belief that one reviews his past, or 'the sins of the past' as others have it, in falling when the fall is likely to end disastrously, I set down here while fresh my experience. First I expected to fall only to my waist, as often has happened, and to support myself on the edges of the crack by my arms. When I found that the crack was too wide and I kept on falling, I thought that this was just like a typical Antarctic experience. Then it occurred to me that it differed from the Antarctic cases in that there you could rely on landing on something to stop your fall, but here I might fall into water. Then I decided, on the principle that is habitual with me now, not to speculate further but to wait and see if I dropped on ice or into water before deciding what to do, seeing I could do nothing effectual to forestall either event.

"When I struck, it proved to be on glare ice—the blizzard that roofed over the crevasse must have been blowing while there was yet water in it, so that the snow which fell into the crack dissolved in the water. I seem to have struck on my feet, but of course they slipped, and I fell on my left side—the one of the sprained ankle. The crack was not wide enough for me to fall either backward or forward, for my face was towards one wall, my back to the other, and the crack at the bottom only just wide enough so I could crawl along it, though wider higher up at the place I fell.

"Before moving I noted the thickness of the ice I lay on, which was about eight inches, but with a fresh tide crack an inch wide through which water could be seen. According to this eight-inch thickness I should have been drowned had I fallen in yesterday. In getting my knife (preparatory to making a hole in this ice to measure its thickness) I found the sheath had been torn loose from my belt in the fall. This made me wonder if I might be much hurt, and how long it would be before any one came along my trail to look for me—I concluded six to ten hours, for the men would first have to come home from hunting and then to wait some time for, my sprained ankle apart, no one would be surprised at my going off after seals and staying away even longer than ten hours. I next thought that I must have sprained my ankle over again, and then noticed a hot feeling in and about the ankle, but found there was more pain in my hip—the only real pain, apparently merely a bad bruise. I was not stunned.

"I arose a little stiffly and looked up to find that in falling I had made through the treacherous snow roof of the crevasse a nearly round hole three or four feet across that gave most of the light where I was, though some came through the snow roof of the crack and some doubtless through the ice walls. Later as I crawled along the floor of the crevasse I found the light ten yards away from this hole about enough for reading ordinary book print by a little straining of the eyes. I crawled about thirty yards in the direction in which I knew the hummock was lowest, and came to an opening where the sky showed nine feet above the floor. By cutting steps with my knife I got out here. On standing up and putting on my snowshoes—one badly broken by the fall—I found my foot seemed no worse. I therefore went for the seal and got him without incident at a hundred and thirty-five yards. Luckily Natkusiak was a mile away on a pressure ridge, saw me and came over to help with the seal. On the way home I unluckily slipped once and gave my ankle a wrench that seemed to hurt more than the fall. At home I got pretty stiff and could sleep on one side only. I feel a little less sore now (written 10:A.M., May 23). We shall pass near this cake to-day (May 23) and I shall have the depth of the crack measured.

"This accident made my arrival home too late for sending Charlie out to sound. The distance I fell was later measured by him at fourteen feet."

There are several points for reflection about this accident. To me the most interesting was the number of things I could consider in logical sequence while falling and in doubt as to whether I should be drowned or should land on ice thick enough not to break. But the most remarkable thing is that such an accident should never before or since have happened to me or to any one with whom I have been associated. We fall into cracks often, but with this exception they have always been so narrow that we have been able to catch and support ourselves by our arms. This accident would not have happened now but for my Eskimo-type goggles with their narrow angle of vision that prevented my seeing where

I stepped. I examined my trail the next day and found that scrutiny of the snow would have warned me that I was about to step on the roof of a crevasse.

I was black and blue in spots, for glare ice is no cushion, and the next day I enjoyed less than ever the jolting of the sled as I was hauled along. The fall proper did not apparently hurt my ankle, but the sprain received in walking home set its recovery back at least two weeks.

The hunting continued bad, not through any real scarcity of seals, but because of the thick weather that prevented them from basking on the ice, and because of wind conditions that pressed the loose ice in so that sealing in open water could rarely be carried out. On such occasions I have envied the explorers who have operated farther east. Sverdrup, for instance. three or four hundred miles east of us kept running into polar bears, but along the floe edge between latitudes 76 and 80 we never saw even a single track in two years. His lands were inhabited by ovibos, the most conspicuous of all animals and nearly the only one that does not try to flee from the hunter, while ours had only caribou, so continually on their guard against wolves that only men of experience could be expected to get many of them. Sverdrup also found walrus. As to the presence of bears, ovibos and walrus the experience of all explorers to the east has been much the same, and I have learned since that our contemporary, MacMillan, was finding an abundance of polar bears and ovibos at this very time. We had to make our living from the elusive seal, which is on the whole the most difficult of all north polar animals to get. I don't think there were more than one or two seals secured by all the British polar explorers that searched for Sir John Franklin in the region southeast of us, although the diaries of several commanders as published in the Parliamentary Blue Books show that attempts were made to get them.

As previously observed the ease of catching seals is taken for granted by those who in recent years have read narratives of the Antarctic. The implements needed for the butchery are a hammer to stun the animal and a knife to cut its throat. It is also well known that schooners go out from Newfoundland and Norway and kill seals by the ten thousand. The explanation here is again largely the same as in the Antarctic; the seal has no "natural enemies" and is therefore largely devoid of fear in the regions where the commercial sealing is done.

But in the Arctic the seals that bask on the ice or swim in the water have to be continually on the alert against the polar bear.

Whatever they smell or hear or whatever they see, they instantly act on the presumption that a bear is the cause. From this it results that men who have been successful sealers on Norwegian or Newfoundland ships have later as members of polar expeditions been unable to get a single seal during the spring when they bask on the ice, except such as happen to be lying in the vicinity of rough ice so that the hunter could sneak up behind cover and fire from ambush.

Luck turned after a few days and Natkusiak and Emiu got several seals. By that time the dogs had been thoroughly rested. We had never stinted their food, feeling certain that we should eventually get plenty. When we had three or four hundred pounds of meat and blubber to take with us, the dogs were in such good condition and excellent spirits that we were able to make great speed towards Cape Isachsen, where we arrived the last day of May.

On the way from the northwest corner of our new land to Cape Isachsen we had been crossing the mouth of a strait. We carried a line of soundings and found the greatest depth to be four hundred and fifty meters, with strong currents to the northwest and southeast, apparently tide currents.

The sandbar where we camped we thought was sure to be Cape Isachsen, yet we began to doubt it next day when in clear weather we found no trace of Castel's party. We supposed that he would have been here four or five days before. His instructions had been to erect a conspicuous monument, and the land was so flat that no such monument could possibly conceal itself. We did not have long to worry, however, for, greatly to our surprise, I saw through my glasses towards evening some black specks on the ice eight or ten miles south. We put up a flag on an ice cake thirty or forty feet high to guide them to us. But apparently Castel was as sure of our being behind him as we had been of his being ahead, so that he failed to look around with his glasses and did not see our flag. To use field glasses carefully every hour or two for ten or fifteen minutes is one of the most difficult practices to teach white men and is one in which most Alaskan Eskimos are greatly superior. During the thirty or forty years since they first got telescopes and field glasses they have learned in their hunting to depend upon them so exclusively that there are few animals seen with the bare eyes that have not been previously discovered with the glasses. In spite of all we could do by climbing up and down over the hummocks and waving our coats, Castel pitched camp three or four miles away, oblivious of our nearness, and I had to send Emiu with a message to bring them over to our camp.

Comparison of notes between Castel's party and mine brought out clearly once more the great advantage of "living off the country." We had given him nearly all our provisions, but this had not turned out to be for his advantage, for hauling the food had made his progress slow and had tired out his dogs. Struggling ahead as fast as possible, the men harnessing themselves to the sled to help pull it along, their progress through the soft snow had been only eight or ten miles a day. We were carrying loads less than half as heavy and even with me on one of the sleds and the other men riding occasionally, we had traveled at such a speed as to cover in one day what it took Castel three to make, with the result that, although his route had been not more than ten or fifteen miles longer than ours and though he had had no delays and we many, we arrived ahead of him. Not only that, but the dogs which had been picked for him because they were the fattest and in best working condition were now tired and thin, while ours which had been tired and poor were now fresh and had more than caught up to Castel's as to fatness.

During that last week or two I must have been suffering from an attack of nerves brought on probably by my helplessness and inactivity. On May 29th, for instance, the following is part of a diary entry:

"The future is beginning to look black to me. My fall into the crevasse seems to have set my foot back to where it was nearly a month earlier and increases the probability of permanent weakening of the ankle, just when I need every physical resource to bring my work to success. I have never endured anything harder than lying at home in camp now when we need meat both as food and to encourage the men. Emiu is turning out badly. He is continually peevish, complaining of hardships and talking of the various charms of the salmon and mosquito country from which he comes. Natkusiak is becoming affected."

In many ways Emiu was one of the best Eskimo companions I have had. He could run all day without geting tired and there was not a lazy bone in him, but at Nome he had picked up the typical laboring man's idea as to what constitutes good food. Castel was one of my best men, energetic, efficient and not devoid of ambition. In the navigation school which he had attended in Holland to prepare himself to be a ship's officer, he had learned the use of astronomical instruments and was competent not only to find his position with the sextant and chronometer, but could make as good a survey of a coastline as any one who was traveling at ten to fifteen miles a day under difficult weather conditions. But he also had the common ideas about food, and had never any more than Emiu been converted to the view that one can be healthy and happy on a diet of meat alone.

As I lay in the camp or rode bundled up in the sled, I became unreasonably irritated by hearing Castel and Emiu talking continually about the delights of tinned sardines, which was Emiu's favorite food, or boiled potatoes, which was Castel's dream. Noice and Charlie were quite different. They had faith in the suitability of a meat diet for health and no feeling that they were being degraded by being compelled to live on inferior food. It was the second day when Castel and Emiu were having their first meal together after a separation of more than ten days and were chanting to each other the praises of potatoes and sardines that I lost patience and decided to send them where they could have them to their hearts' content. As said above, this was doubtless a case of nerves brought on by my invalidism. Under ordinary conditions I have been able to listen to such talk by the month, knowing that the men would forget all about it when the last food brought from home was gone and they had been for a few weeks on a straight meat diet.

I had the self-control to wait till the first irritation had passed before speaking. I then told Castel that I had made up my mind not to send him ahead but back to the *Bear*. I told him that our experience of the last ten days had shown that the exploratory party could make better progress by traveling light and living by hunting, even though I should be carried as baggage, than by carrying provisions. I told him also that I realized what a hardship it was for him to do without the food that sailors are used to. Natkusiak would go back with him and Emiu, but only as far as Melville Island. I knew that as soon as he was separated from Castel and Emiu his discontent would disappear, for we had already lived together for years by hunting. It was a life which Natkusiak really liked although he had lately been somewhat discontented in sympathy with the malcontents. He was something like a man who never used to take a drink but began to echo the talk of others about the delights of cocktails when prohibition came in force.

Once resolved to send Castel back from Cape Isachsen instead of going back myself, my mind began on various schemes and dreams connected with this altered program. I was already comitted to wintering on Melville Island the next year whether the *Bear* got there or not, but it now appeared to me that we could do much better than that. We could divide our party, the larger number wintering in Melville Island and a few of us spending the winter at Cape James Murray. I talked this over with Natkusiak and found him enthusiastic for the plan, provided we could get the right people to be with us. I thought that Charlie and Noice would be ideal and Natkusiak's opinion was that Alingnak's family would be a suitable addition.

A special letter of instructions to Storkerson covered this plan. Immediately on the arrival of Castel's party in Liddon Gulf, Storkerson was to fit out Natkusiak and Alingnak's family with one or two sleds and they were to proceed by way of Cape Grassy to Cape James Murray, where my party would join them probably in September or October although we might make an effort to get there in late July. I expected that making a living at Cape Murray would be a good deal more difficult than in Melville Island, although I had little doubt that we could do it. Nevertheless, the plan was to have only a few dogs with us there during the winter, Storkerson keeping the greater number in Melville Island where the ovibos makes life simple. Being long past the idea that traveling in the darkness of winter is impossible we planned that sledge parties should be on the road all winter between Melville Island and Cape Murray, thus giving a base for the spring work four hundred miles north of Kellett. But while traveling in darkness is feasible hunting is not, and the intention was to accumulate at Murray by freighting from Melville Island dried ovibos meat and fat so that we could start thence with loaded sledges northward in the spring before the arrival of hunting light, these provisions taking us through the first month or six weeks and into the period of abundant daylight.

My thoughts centered around this during the whole summer. It was one of the most fascinating undertakings we have ever planned because so different from anything that has been tried in the remote Arctic. The only analogy was John Rae's wintering in Repulse Bay on the mainland 600 miles farther south.

Before Castel started back we took several sets of observations at Cape Isachsen and were considerably disturbed to find that the observations placed us farther east than Cape Isachsen is on the map. At that time we supposed that our watches must be wrong, thinking that Cape Isachsen must surely have been correctly located, as the journey from Sverdrup's winter quarters to the Cape and back again is so short that Isachsen's pocket chronometer could scarcely be supposed to have gone wrong in that distance. I have since learned by reading the account of Isachsen's journey that no observations were taken at Cape Isachsen and the place was laid down on the map by dead reckoning. Our watches were probably right after all, and Isachsen had made an error in his reckoning.

It took two days to get everything ready for sending Castel back. This time was needed mainly for talking over plans and writing letters of instructions to govern his journey south and others to supplement directions already sent to Storkerson and Gonzales. Both Castel and Emiu now experienced something of a change of heart with regard to potatoes and sardines and asked me not to send them back to the *Bear,* professing eagerness to spend the summer in Melville Island and willingness to try to accustom themselves to a meat diet. Without agreeing at the time, I wrote Storkerson that he should have a talk with them when they arrived and decide whether to keep them with him in Melville Island on meat or send them to Banks Island to the *Bear* and the groceries.

In planning Castel's journey southward, I made the assumption that the Admiralty chart Number 2118 which we carried was substantially right in laying down King Christian Island as a land at least eighty or ninety miles in diameter, lying south of the Ringnes Islands. We thought King Christian Island was probably even bigger than that, and was indeed the east end of our new land. I accordingly instructed Castel to head for the northwest coast of King Christian Island as charted, and try to determine whether it was a separate land or one with Borden Island. If it were a separate land, he was to follow the west coast down to where Sherard Osborn had laid down Findlay Land, then strike for the vicinity of Cape Richards. He would proceed south through Hecla Bay across into Liddon Gulf, deliver my letters to Storkerson, and then continue according to Storkerson's decision.

Before Castel left I was done with my irritation on the score of sardines and potatoes but there still appeared a good reason for sending him back, both to explore King Christian Land and to get Natkusiak over to Cape Murray. Castel and Emiu would also be useful in Melville Island, provided they volunteered to stay and were prepared to reconcile themselves to local conditions. The ten-day separation between our traveling groups had made it clear that I was less of a handicap riding in the sled than double my weight of groceries would have been.

Part of Castel's instructions were that he was to carry with him southward certain things which we did not need now but would find useful during the summer. He was to make a depot of these on the south coast of King Christian Land, or rather on Osborn's Findlay Land. My present plan was to return that far south during the month of July and spend the summer either there or on the south coast of Borden Island.

# CHAPTER L

## INTO THE UNKNOWN BEYOND THE RINGNES ISLANDS

AT many places in the North we have seen a peculiarity which the geologists refer to as "raised beach lines." Where waves from an open sea strike the shore a beach is formed having the characteristic features familiar to all of us. Later the land may rise so that these elevated beaches are tens or hundreds of feet above sea level and sometimes at long distances inland. In some parts of the polar ocean there is enough open water in summer for beaches of this characteristic type to be formed and their geological remnants are discovered at high latitudes no less than low in the character of elevated beaches. But in other places wave action on the shore is either rare or entirely prevented by the continuous presence of ice at all seasons. The force that works against the shore is not that of wind-created waves and breakers, but the thrust under almost infinite pressure of the edge of the ice floe against the land. The action of lake ice on the shores especially of small lakes has often been described and attributed to the expansion and contraction of the ice surface under changes of temperature. This force is enough to heap up boulder ridges and move large rocks.

Expansion and contraction of ice may have its effect to a slight degree in the formation of the peculiar northern beaches we are now trying to describe, but the main force is that of the wind, or of the currents which are in the main created by the winds. Sometimes the ice heaps up on the land and thousands of tons of it are shoved hundreds of feet inland and twenty or thirty feet above the level of high tide. Such action takes place in Alaska, for instance, at Point Barrow where, according to information given me by Mr. Brower, the houses which stand one or two hundred yards from the beach are every few years in danger. Mr. Brower takes it for certain that eventually his large storehouse will be destroyed in this way, for it was built by white men who did not appreciate the distance to which ice may be shoved up on the land; and the beach is already being cut away by waves and the sea is advancing upon the land. At Point Barrow the characteristic beach form is produced by the waves, for the summer season is long enough nearly or quite to obliterate the traces of ice action. Still there are places where gravel ridges will remain for several years that have originally been heaped up by ice pressure.*

But it is only in localities like that of Cape Isachsen, where wave action seems to have been of limited effect for millenniums past, that these pressure ridges have survived until the land has had time to rise. It seems that it is only within recent times, geologically speaking, that these islands have been rising, for the elevated beaches consisting of gravel heaps formed by ice pressure have not been seen by us more than forty or fifty feet above sea level or more than about a mile inland.

Now that the rising and sinking of the arctic islands has been mentioned we may summarize here our observations on that subject. We did not notice in Victoria Island any clear evidence of change of level. On the southwest coast of Banks Island are some cliffs so undercut by the waves that clearly their force at present is expended at least ten or fifteen feet lower than it once was. The west coast of Banks Island is deeply embayed and there are many "drowned valleys," showing a considerable sinking. But in the same locality decaying driftwood lies so high up on the beach and so far inland that it seems clear the land has recently risen ten or fifteen feet. In other words, there was a period of subsidence during which valleys cut by running streams were submerged and filled with sea water, but the turn has come and in recent times there has been a rise of ten or fifteen feet at least. On the east coast of Melville Island we found the nearly complete and unfossilized skeleton of a bowhead whale eight or ten feet above sea level and a hundred and fifty yards inland. This means an elevation, for we know through observation of many stranded whales that their skeletons always lodge not at the upper level of wave action, as is the case with driftwood, but at the level of low tide or even lower, where they are commonly buried by sand. This skeleton was undoubtedly originally so buried at or below the level of low tide. The land has since risen and wind and other forces have carried the sand away. Though the skeleton is unfossilized it is thousands of years old, for the same forces which can preserve the flesh of mammoths so that it may be examined to-day and is still flesh, can more easily preserve tree trunks and skeletons from decaying. On all the islands discovered by us except Meighen Island, and on both Amund Ringnes and Ellef Ringnes Islands, we have found seashells of the type to-day present in those waters scattered so thick as to make the surface of the land gray and in places almost white at various levels up to 150 feet, showing clearly the recent elevation of these lands.

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* For a photograph and description of one of these ridges, see "My Life With the Eskimo," pp. 383-384.

While Castel's party set out towards evening of June 4th on their search for King Christian Land and the journey southward, Noice, Charlie and I began to follow the edge of the land floe northeastward.

One of the first things we noticed was the gradual increase of seals. Although I have in recent years disagreed both on grounds of theory and experience with those who believe that seals get fewer the farther north you go and eventually disappear, still I have not gone to the extreme of thinking that they increase in numbers as you go north. The greater numbers we now found were there doubtless through peculiar local conditions, probably because this vicinity the previous autumn had had more open water, thus inducing the seals to gather where they had later wintered.

I either overrated the disability of my ankle or else recovery was remarkably rapid. On June 5th the ice was unusually level and there was bright sunshine so that any inequalities in the snow were shown in relief by the shadows. Thinking that if I wore snowshoes and stepped carefully I should be unlikely to twist my ankle, I decided to make the attempt to walk, going slowly with a long bamboo staff to steady myself. I struck out an hour ahead of the sleds and walked at the rate of a mile an hour until they caught up. They then stopped and waited till I got a mile ahead of them again. In this way I was able to walk six miles. Our progress was slower than it would have been had I ridden on the load but I was afraid that these men, being new, might be unduly depressed unless I showed signs of ability to help myself. Furthermore, to-morrow was likely to be cloudy and I would not dare to walk. The dogs would need their strength conserved on sunshiny days so as to be able to haul me when it was cloudy.

That evening optimism had returned, as shown by the entry: "Richard is himself again, nearly. I walked six miles and felt not a twinge, but then the light was good so I saw where I stepped and I walked carefully.

"I shot an ugrug on level ice near a tide crack at thirty-five yards, about a mile southwest by south from camp. It is a young animal. I watched him over five minutes through my glasses when I first saw him and as he did not move I concluded it was a mud heap. When I got nearer he lifted his head and saw me (becoming suspicious rather than frightened) so I had to hunt him by the auktok which took an hour. Had I identified him at first, I could have secured him from cover in five minutes. From a pressure ridge at the camp I saw other seals. For practice Charlie went after three that were half a mile away. He got a large male seal at sixty yards."

So the optimism was founded not only on being able to walk for the first time in thirty-seven days, but on the foundation of two seals killed and hauled to camp where one was more than we could use. I have always found it good tactics in the early part of a trip where an attempt is being made to convince new men that living off the country is safe, to kill a few animals to throw away. I get no pleasure from the killing of animals and disbelieve in waste of any kind, but the effort is not wasted, nor the meat either, if it creates confidence, for that leads to good spirits and enthusiastic work with willing execution of orders and all the happy circumstances that flow from a belief in the practicability of what is being attempted and the soundness of the method used.

This was Charlie's first seal, and I remember the details very well. The weather was fine and we went together to the top of an ice hummock by our camp. Out of seven seals visible we selected three on perfectly level ice. If you are going to use the auktok method, dispensing entirely with cover, it is essential that the field of approach shall be so flat that during your snake-like progress you are never hidden from the seal's view, for no matter how carefully you may play seal, it will spoil everything if he sees you disappear for a moment to appear again, for this is an essentially unseal-like happening. There was wind enough so that the crunching of the snow under a man crawling could not be heard by the seals at more than forty or fifty yards. Charlie had first a careful coaching, ending by having him explain to me exactly what he was going to do. He then went out and did it, to all appearances as well as an old hand. He became in one jump a good seal hunter and after that probably lost less than one seal out of four he went after, which is what the record of a good seal hunter should be. Here we had again an example of the advantage of a white man's more orderly mind. Emiu had been drilled many a time and probably tried a dozen seals before he got the first one.

Eight dogs were in our present team. I prefer six but made an exception in this case because I expected to have to ride a good deal. Seven were chosen but at the last moment we added Jack, because he was fat and promising. But the day after we separated from Castel's party Jack began to show symptoms of severe illness. He did not become delirious as many sick dogs do in the North nor did he refuse to eat, which is the commonest of all early symptoms, but he behaved as though he might have severe inflammation of the bowels. Altogether our expedition lost perhaps a quarter of its dogs by one form or another of dog disease, but most of these died at home in winter quarters and it was fortunately seldom that any disease broke out in our advance teams. We were disturbed by the illness through its threat to the rest of the team. None of us three had ever driven Jack before so that we were not as attached tc him as to some of the other dogs, but he took his illness so bravely that before he died we were thinking more of hoping he would get over it than of the possible effect on our plans.

"June 6th: Jack is very sick but has none of the ordinary 'dog sickness' symptoms. He is in pain, eats snow continually which seems to show he has fever, and tries to vomit. He acts rationally in every way.

"June 7: Jack is in greater pain and is weaker but acts merely as he might if he had some such disease as inflammation of the bowels. He ate a small piece of meat to-night and I have not given up hope. That was one reason we made such a short day today. We let him walk along beside the sled.

"June 8: We started at 1 P. M. but stopped at 3:05 P. M. to give Jack a rest. He was led behind the sled by Andersen. We started again at five. He was so weak then that he could not well stand and Andersen had to shoot him. I was a mile or two ahead walking slowly and picking trail (I did not know about Jack's death until camping)."

One June 5th we found an ice hummock with a good deal of sand on it, suggesting to me that it must have been formed in the vicinity of land and the next summer carried out to sea. Its advantage to us was that the sun striking on the black surface had made a pond of water at the foot although the same sunlight striking on white ice had made no impression. We were able for the first time to use thaw water for cooking.

In "Farthest North," Nansen tells us that no pressure ridges are more than thirty or thirty-five feet high and that accounts of pressure ridges much higher are merely careless statements founded on inaccurate observation. This statement has been much quoted and generally believed by those writers forced to rely on books for their information.* But Nansen's ice experiences were of a particular and limited sort. All those who have made journeys out over the ice from a base on land have noted that the pressure ridges are highest near shore and get lower as you proceed to seaward. They are also, by more elementary logic, most numerous near shore and get fewer farther away from land. Captain Sverdrup was with Nansen both on his crossing of Greenland and in the drift in the *Fram,* so that Nansen's only ice experiences which were not the same as Sverdrup's were on his journey with Johansen after they left the *Fram,* first north and then back to Franz Josef Land. But they arrived in the vicinity of land in summer when they do not seem to have met much if any landfast pressure ice. It is, then, interesting to quote Sverdrup who, after Nansen had retired from active ice exploration, had extensive experiences during his expedition of 1898-1902. He says: ** "During the day we passed pressure ridges which for height surpassed anything we had yet seen. We thought of measuring them but the wind was so strong and keen that we decided to leave it till we drove south again, hoping then to have a better opportunity. However, to have some idea of their height, I asked Isachsen what he would put it at, and to be sure of his not overstepping the mark I guessed first, saying, 'That pressure ridge is about eighty feet high, I suppose?' 'No,' answered Isachsen, 'it's 120 feet if it's a foot.' How high it may have been is difficult to say since we did not measure it."

Several captains of the Beaufort Sea whaling fleet have told me that when they have been in the crow's-nests of their ships they have seen ice so high that they could not see the horizon beyond. Such cakes would be from sixty to a hundred feet high according to which ship was involved. I remember one of the captains saying that his crow's-nest was a hundred and ten feet from the water.

The ice ridge from which we had seen the seals that Charlie later went after was rather high although I have seen several higher. We measured it seventy-three feet above the level of the ice on which the tent stood, or about seventy-eight feet above water level.

On all our ice trips and at every distance from shore we have found ice with a certain amount of earth or gravel upon it and sometimes fragments of rock or small boulders. The day after

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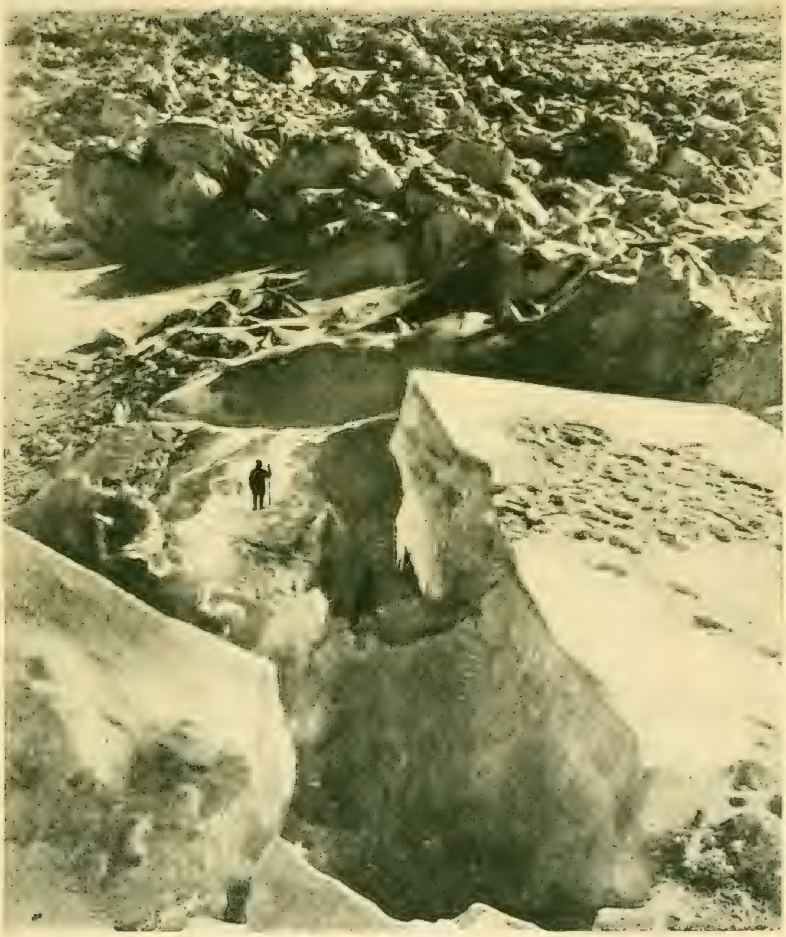
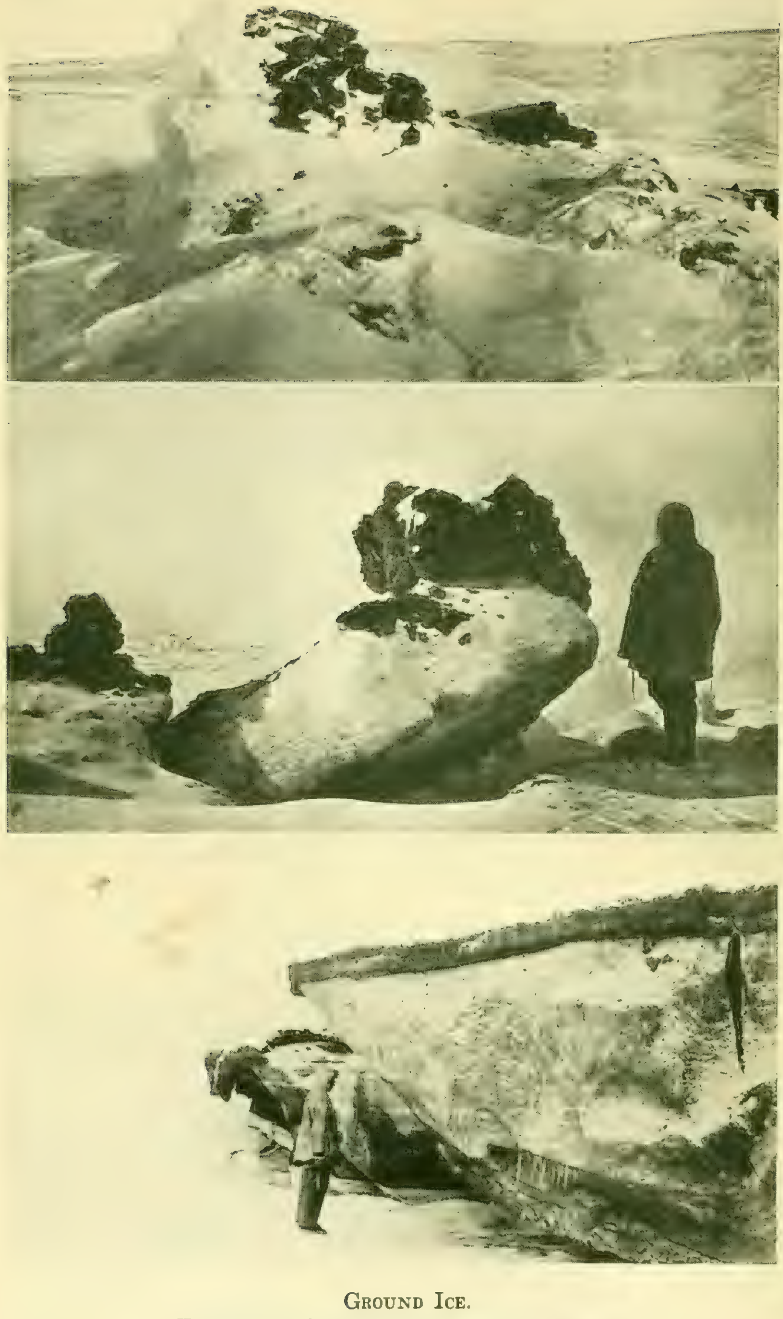
* See p. 287, "Earth Features and Their Meaning," by Professor William H. Hobbs.

** "New Land," by Otto Sverdrup, London, 1904, Vol. I, p. 375.



THE PRESSURE OF A WINTER GALE WILL BREAK UP THE HEAVIEST OLD ICE.



GROUND ICE.
Fragments of earth shoved on top of sea ice.
A lump of earth on top of a cake of sea ice.
Over ten feet of clear ice and a foot of soil on top.

coming upon the sandy hummock we found on top of some ice that was two years old or over, a gravel and boulder ridge eighteen paces long. At its highest point it was about five feet higher than the ice on which it rested and had an average width of between ten and fifteen feet. The ridge was composed of mud, gravel, slate and boulders, the largest weighing over a hundred pounds. Some lumps of soil with lichens I took to show that it had been formed by a landslide from some steep and not entirely barren land. Apart from this earth ridge, the ice was a perfectly ordinary old floe. It was now lying thirty or forty miles from the nearest land and the depth of water underneath it was probably over thirty fathoms, although we were unable to sound right at that point; no sounding we got in the vicinity showed less than twenty-six fathoms.

While it seemed obvious that this earth ridge had been formed by a landslide descending on ice lying near a precipitous coast, this could not have happened on any land with which I am personally familiar, except possibly on the north or south coasts of Banks Island and both these are so far away from our present location that it is not likely they can have been the source. I concluded at the time that this ice had been lying a year or two ago up against the coast either of some undiscovered land or else some precipitous portion of the Sverdrup islands to the east. I have since found on reading Sverdrup's account of Hell Gate * that the slide may very well have occurred on the southwest corner of Ellesmere Island. Certainly the new land which we were presently to discover appears to contain no cliffs given to landslides. This and other similar mud heaps found by us on the ice in the vicinity, probably show that the general current is westward from Jones Sound, taking the ice eventually into the Beaufort Sea and starting it on its probably circuitous route south, then west and thus around the polar basin, eventually to melt in the Gulf Stream north of Iceland and Norway, which seems to be the fate of most of the old polar ice. If the current be assumed to be the opposite—that is, running into Jones Sound from the west instead of out of it—these mud heaps must have come from some hitherto undiscovered land in the north or west.

The day before we found the large gravel ridge, we camped on ice where bushels of small shells were heaped on the pressure ridges. It seemed there must be a deposit of these on the sea bottom which

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* "New Land," Vol. I, pp. 340 ff.

the ice had scraped up. The most common were a small, very fragile bivalve, but there were other bivalves as well as snail shells.*

Traveling as we were many hundreds of miles away from the nearest base where anything could be safely stored, it was not possible for us to bring home any specimens that were difficult to preserve, such as the bodies of large animals or even their skins. Charlie collected in his notebook many plant specimens, including I believe, a sample of the lichens found on the earth ridge although I also took samples of them. The only thing we could do further was to preserve a few specimens in alcohol. On leaving the ship we had taken with us a quantity of Horlick's malted milk, both because it is a favorite food and because it was put up in one-pound airtight tins which served a multitude of uses after they had been emptied. Sometimes we used them for the protection of records we left behind, knowing that these documents would be safe till the tins rusted through. But perhaps the chief use was as containers for alcohol which preserved small zoölogical specimens. These were chiefly shrimps and such forms of floating life as we found either in the ocean or in the stomachs of seals. We paid particular attention to the intestinal and other parasites from which the seal suffers and made something of a collection of these, usually taking the parasite together with a piece of the skin or membrane to which it was attached.

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* Discussions and identifications of these shells as well as of all the scientific specimens gathered on the expedition have been or will be published by the Department of Naval Service of Canada as part of the scientific reports of the expedition, of which three volumes have been printed and fifteen volumes are in preparation. In addition there will probably be other volumes not yet mapped out.

# CHAPTER LI

## DISCOVERY OF MEIGHEN ISLAND

THE first hint that we might be approaching undiscovered land we got from the fact that when there was a current shown in our observations, it was running either southeast or northwest and appeared therefore to be of tidal origin. The map as it stood before our lands were placed upon it showed a big open bight which Sverdrup named "Crown Prince Gustav Sea." A strong tide current is found only in a strait, and were the "Prince Gustav Sea" really free from land there would be nothing hereabouts having the character of a strait. But alternating tide currents showed that we must be in a strait, and that "Crown Prince Gustav Sea" does not exist in the form assumed by Sverdrup. Our maximum soundings were around four hundred meters, which was compatible with this being either a sea or the mouth of a strait.

I have always thought that the discovery of land which human eyes have never seen is about the most dramatic of possible experiences. I don't pretend to be used to it or past the thrills that go with it. It is still my dearest dream to discover more lands or, if there are found to be none, finally to establish that fact for the half million and more square miles that still remain unexplored in the north polar regions. But it is probably true that the first thrill of any great new experience can never be quite duplicated, and it seemed to me that after the currents began to hint of nearness of land my companions were more excited about it than I was. At any rate, they took every opportunity to climb the highest hummocks, and I was glad to have them do it in my place, both because my weak ankle was always in danger in climbing, even though I crawled up and slid down instead of actually walking, and also because I wanted one of them to have the pleasure of being the first to sight land.

The morning of June 12th Noice thought he could see land from the top of an exceptionally high pressure ridge, and when I got up there and could see nothing that resembled it Noice maintained this was because the fog banks had meanwhile shifted. That day we were able to travel only five miles, for we got into thick ice through which it was impracticable to pick a trail in the impenetrable fog which had settled down. Just before we went to bed Charlie reported seeing what he took for land on the temporary lifting of the fog, but this could not be verified because the fog descended again.

The next morning was moderately clear and no land was in sight, but after traveling about five miles to the northeast, from the top of a hummock I saw indubitable land to the northeast. As the ice was very rough we had to camp after approaching six miles nearer. The next day, June 14th, we pitched camp on the sea ice a hundred yards from the new land, having traveled first about nine miles. It had accordingly been about fifteen miles distant when we sighted it.

The diary gives this entry: "Reached land 12:15 A. M. June 15, but did not go ashore as I knew the boys were anxious to be the first. As Charlie seems to have been the first to see what is clearly identifiable as this land, I called that honor enough for him and let Noice step ashore first. We saw a seal but did not try to get it." Interest was solely in the land.

This land, first seen, was barely visible against the clouded sky. The top of it was snow-covered, with a smooth and oval skyline such as I have never seen on any land. It occurred to me that it might be covered with a glacier. I had never seen a glacier in the Arctic, nor have I seen glaciers in any land, beyond those that fill mountain valleys in the American Rockies, Iceland, and Switzerland. As I was still unable to walk far and as the boys were enthusiastic about exploring, I asked Noice to go inland as far as he could while Charlie followed the beach a little way, coming back before eight o'clock to help take an observation for longitude.

Since leaving Cape Isachsen more and more birds had been noticed. Some sandpipers flew over camp June 7th and the first Ross's gull June 10th. June 13th two loons (black-throated?) were seen flying towards land, as well as several jaegers. On June 14th when camped near the beach we could hear the cackling of geese inland, and later concluded they must have been Hutchins geese as no other kind were observed on the island. Next day we found a Hutchins goose nest with three eggs, and saw a female eider duck, undoubtedly king eider, and two large gulls, perhaps Barrow gulls.

The snowdrifts in the vicinity of this land seen not only the day we landed but several days following, showed clearly that the prevailing winds are from the north or north by west, and the next most important winds from the SSE. No snowdrifts were being formed at this season of year, but the winds still maintained their character and the north by west winds were especially strong and persistent.

Noice went several miles inland, yet his report was not convincing as to whether there was a glacier. I had refrained from saying more than that he was to learn what he could and tell me about it when he got back. I did caution him to be on the lookout not to fall into a crevasse. Neither had Noice ever seen a glacier but he lacked even my theoretical knowledge of them and apparently thought that their surface would consist of glare ice, or at least some form of ice. When he found only a snow surface he concluded that it was not a glacier. He found no knolls to climb upon although he saw one in the far distance. After traveling towards it for an hour or two without getting appreciably nearer he concluded it was too far away and turned back. He noticed the absence of the vegetation which is usually so evident in the Arctic, and kicked in the snow trying to find grass but saw none. Later when we talked he was unable to say whether he had been walking over land or snow-covered ice. But it is clear that if there is a glacier on this island, it certainly does not come down to the vicinity of the sea on any part of the coast which we touched.

This is the description entered in the diary that day: "The land lacks the undulating outline of Isachsen Land (or our Borden Island). Near the coast are rolling hills and knobs of gravel; inland is a dome of turtle-backed outline, free of hills or ravines that can be seen from the coast hills here. There are erratic boulders, none very large, and gravel but no rock *in situ*. Charlie picked up some worn pebbles and small pieces of petrified wood (willow?) on top of hills two hundred feet above the sea. We are keeping all these.

"A beacon was built by Noice to-day on a hill three-quarters or one mile east from camp, half a mile from the beach. It can be seen with the bare eyes about three miles. It is about three and a half feet high. We shall put up a mark of boxboard there, so: 'CANADIAN ARCTIC EXPEDITION—June 15, 1916.' There is also the record of which a carbon appears on the opposite page. This is wrapped in a Horlick's Malted Milk paper wrapper and enclosed in a New-Skin can and that in a Kootenay Cocoa tin —all three stand for things that have been useful to us on this trip but which now survive only in their wrappers. The tin is placed among the upper stones, and the T-shaped wooden mark is stuck in among the stones. The beacon is against the sky and will show well unless a bear demolishes it. Even then it will show as a heap, as does McClintock's beacon at Cape McClintock. I wish we had some screw-top aluminum cylinders to take the place of his papier-mâché tubes to protect these records—some one might find them of interest when we have followed McClintock. As it is, if we have good luck and the records bad luck, they may be blurred or destroyed in our time."

The following is a copy of the record itself as we left it at the monument:

"Meridian Distance about 4° 15′
East of Cape Isachsen
N. Lat. about 79° 53′

June 15, A. M., 1916.

"This land was first sighted by Karsten Andersen of our party about 4 P. M. June 12 from a point on the ice by the shore lead some 20 miles SW x W from the hill where this record is left. First landing was made by Harold Noice about 3 A. M. to-day, from our camp on the ice a quarter mile offshore. We have this day taken possession of this land, by power especially vested in us for that purpose, in the name of His Majesty King George V, on behalf of the Dominion of Canada, and shall proceed to its further exploration by following the coast to the northward from this monument and later in such other directions as it may lead.

"Men, seven dogs and gear of our party all in good condition. We have so far had no difficulty in securing game for food and have noted no diminution in the number of seals as we go northward.

WITNESS:
Karsten Andersen,
Harold Noice.

"For the Canadian Arctic Expedition,
Vilhjalmur Stefansson,
Commander.

"First landing made at a point about true west from this monument distant one-half or three-quarters miles."

Since separating from Castel's party we had been cooking exclusively with kerosene burned in a primus stove. How economical of fuel such cooking may be is shown by the fact that between June 4th and June 16th, both dates inclusive, we had used only one gallon. This had cooked two meals some days and three meals other days. Perhaps half a dozen times we had found thaw water to cook with but most of the time the fuel had had to melt snow.

Of course such economy would not have been possible had we cooked more than one sort of food. We had a few items of groceries with us, but nearly every meal consisted of boiled seal meat with the broth for drink.

As we started the exploration of this new land on June 17th the sledges followed the coast, keeping to the sea ice, for the land was already largely bare of snow. Meantime I crossed overland not only to get an idea of the topography but also to save distance, for I thought I could cut across in such a way as to make in four miles what the others would have to do in eight. In spite of light fog I had no difficulty in keeping track of the team but apparently the men had greater difficulty in keeping track of me. After hobbling along ten miles overland at a very slow rate, I went down to the sea and waited about two hours for the sleds to come along. When they did not appear I started back along the coast and after six or seven miles found a camp in charge of Noice. They had somehow got the impression that I was behind them, had stopped and waited for me awhile and eventually made camp. Noice was in charge now while Charlie was inland looking for me on the theory that I must have sprained my ankle over again.

The season, although we were much farther north, seemed farther advanced now on June 16th than on June 22, 1915, on the south coast of Borden Island. It rained heavily the night before and the night after June 17th, and near the coast there was very little snow except where it had accumulated in ravines or in the shelter of cliffs.

Sea shells were scattered over the land, and there were the peculiar ice-built elevated beaches already described. It appears, then, that this land has been rising in recent times, in common with most or all others in this part of the Arctic.

More evidence of a rapid rise of the land appears in the islands discovered by us and in the two Ringnes Islands than in Melville, Banks and Victoria Islands. Skeletons of ovibos are absent from these rapidly rising and perhaps comparatively new lands, while either the bones or the living animals are found in the lands that appear older. Our observation of the habits of the ovibos is that they are very unlikely to cross sea ice from one island to the other; in fact, were I the owner of a herd of them I should take no pains to keep them on any particular island, feeling sure that they would never of their own accord try to leave it. We have never seen their tracks farther than one or two hundred yards out on sea ice. These habits of theirs (together with the fact that their bones are found in the old-appearing islands but not in our islands or in the Ringnes Islands) have suggested to me that the ovibos spread over the Arctic at the time when most of the islands were connected by land bridges, but when our islands and the Ringnes pair had not yet risen from the sea or were at least not connected by land with what are now the other islands. A later subsidence left the animals populating the remnants of the previously connected land, but because of their aversion to crossing ice they have never penetrated to the newer islands.

On his discovery of Prince Patrick Island Sir Leopold McClintock was also the discoverer of the eggs of Ross's gull, a nest of which he found near the north end. But to this day such eggs are rare in collections. On June 18th on a reef between Second Land and a smaller island lying to the north I saw with the glasses some gulls sitting while two flew about my head, screaming and behaving much like terns that have a nest. On the chance, I walked half a mile out of my way to the reef and found a nest of two eggs. The bird remained on it till I was about fifty yards away. There were also two holes where nests were being made by other gulls. The nest was little more than a bowl in dry dust, lined with a few grass roots and some small bivalve shells, found on the reef itself. Knowing these eggs to be so rare, I took the nest, what there was of it, and the two eggs.

Second Land (which I have since named Meighen Island) is the most nearly barren land I have seen in the Arctic. There is a little grass in places and there are some lichens and mosses, but a dozen caribou would find it difficult to spend a season and they certainly could not live there permanently. We saw caribou tracks that were several years old. Almost certainly no animals stay there more than a few days at a time. We saw no lemmings and no owls but we found owl exgorgitations, the ordinary balls of lemming bones and hair. There were the three kinds of gulls already mentioned and at least one and perhaps two kinds of sandpipers. But it is the paradise of the Hutchins goose. Seals had been more abundant around the camp which we made nine miles before landing than they had been the entire season, but we saw none on the landfast ice during our survey of the coast. The conclusion is that in this region sustenance for a large party can be found only by following the shore floe.

We managed to get along for a while on the eggs of the Hutchins geese. The men followed the shore with the sled traveling on the sea ice from point to point while I walked inland, and when I tried I was able to pick up incidentally twenty or thirty eggs in a day's walk. Altogether I took fifty-nine eggs from fourteen nests, the largest number of eggs found in one nest being six. We shot one goose for the purpose of bringing home the skin of its head and neck for more exact identification; since we were collecting some of the eggs for specimens this was a necessary precaution. Apart from the fifty-nine eggs and the one goose, we lived while surveying Meighen Island on seal meat already in the sledge on landing.

By June 22nd the sun had gone as far north as it intended, and so had we. But I had talked much with Peary about his Crocker Land to the northwest, and for twenty-four hours in clear weather Noice, Charlie and I took turns in watching from a two hundred-foot elevation the skyline to the west and north. There were appearances on the horizon which might have been taken for land had one known it to exist but there was nothing that might not equally well have been fog clouds from open water. The wind that day was blowing a gale from N x W and certainly it was as favorable an opportunity as we could reasonably hope for in this region where clouds and fog are the rule in summer. We could see Heiberg Island northward to the vicinity of Cape Thomas Hubbard, and the shore floe was plainly indicated both by rough ice and occasional patches of water. It did not run in a straight line towards Cape Thomas Hubbard but curved well in towards Heiberg Island.

I thought it necessary to explain a decision not to go farther, and this was done by the diary:

"June 23: We were at the north tip of our land and started about 4 P. M. to follow the coast southeast. Following the coast of this island really means that we are now turning back and that the hope of further discoveries of land is renounced for yet another year. As I did last year, I set down now the main reasons that decided us to discontinue the advance. Though it would interest me rather more to go out to the floe edge again and take soundings and current observations, the week or so which this would probably take would advance the season so rapidly and perhaps delay by double that time our reaching Cape Murray. I have therefore decided to devote the rest of the summer to two things: (1) the further survey of lands already discovered; (2) preparations for next year by putting up meat at Cape Murray, if that proves to be a good meat district (and if we can reach it), or going to Melville Island to assist in putting up meat, should game prove scarce on Borden Island. Our survey program is about as set down in the record on the next page. My ankle continues to give trouble but this is not one of the main reasons for turning back. . . . This seems as good a game district as we are used to and the question of provisions and fuel does not enter into the matter of our turning back."

In a beacon near the north tip of Meighen Island we left the following record:

"June 23, 1916,
"North Latitude 80° 7′
"Meridian distance 4° 43′ east of Cape Isachsen.

"We are leaving here to-day. We intend to survey the east side of this land, proceed south perhaps through Hassel Sound or east of Amund Ringnes Island, determine if Findlay Island is part of the land discovered by us in 1915, and survey the south coast or coasts between Findlay Island and Cape Murray. We then intend to pass the remainder of the summer in the land discovered in 1915. If food conditions are favorable we shall probably winter near Cape Murray to prepare a base for the exploratory work of the Expedition to the north and west of that point in 1917.

WITNESS: "For the Canadian Arctic Expedition,
Karsten Andersen, Vilhjalmur Stefansson,
Harold Noice. Commander."

Between June 17th and 28th we were able to traverse the entire west, north and east coasts of the island, making a reasonably accurate survey for the worst of the fog season was over. On June 28th we struck directly south from the most southeasterly corner of our land, intending to pass east or west of Amund Ringnes Island according to where we should strike it, for we had concluded we could count on no certain correspondence between the longitudes as obtained by us and the lands as laid down on the chart. On June 30th Amund Ringnes Island came in sight in such a position that it was clear we had Hassel Sound about directly south and would pass between the two Ringnes Islands.

# CHAPTER LII

## HASSEL SOUND AND KING CHRISTIAN LAND

THE season was advancing rapidly, uncomfortable to men and dogs, difficult for walking and for hauling sledges that stick in slush much worse than they do in any soft snow of winter. Most of the time we were fairly wading as we walked. On July 2nd we landed on the west coast of Amund Ringnes Island and proceeded to follow it south. Bearings taken of the land ahead on our side of the strait and also of conspicuous hills on the Ellef Ringnes side, soon showed that the strait, obviously much wider than the three miles indicated on the chart, is really in few if any places less than fifteen miles wide.

We had been having trouble with snowblindness continually on account of the lack of amber-colored glasses. On landing in Amund Ringnes Island we were all of us slightly touched and Charlie was so seriously snowblind that we were delayed three days. In a case as bad as his was the pain is extreme, equalling the most severe earache and worse than toothache.

In addition to the widening of Hassel Sound and the new determination of the coastline we were not able to learn a great deal about Amund Ringnes Island. In some of the creek mouths I noted pieces of coal float, showing that there are veins of coal inland which can probably be easily found. This hint is of value to any one who may winter there. We found traces of caribou but no indication that they are numerous.

Although it was midsummer, or rather because it was, Hassel Sound proved rather disagreeable:

"July 4: Charlie is much worse (with snowblindness), groaning and in great pain. He could not eat anything till afternoon but was a little better in the evening. The northerly gale slackened to a strong breeze in the afternoon but increased to a gale again in the evening. Snow squalls, and sun seldom visible.

"So as not to risk my ankle, I sent Noice inland to hunt. Two miles away he saw a cow and calf caribou, fired at them and wounded the cow. He then chased them and they ran off. Too bad, for we are getting near the point where we must have meat. Noice must learn hunting some time, and the experience will do him good as most people learn best from failures.

"July 5: Started 7 A. M., telling the others not to start for at least two hours to give me a chance to hunt. One and one-half miles south of camp I saw a seal, was prevented from approaching nearer than three hundred yards by open shore lead, shot him at that range and had to go half a mile around to get to him. It turned out he was shot through the neck just back of the head and above the spine. He was merely stunned. I had pulled him ten feet or so from his hole and was about to leave him when he began to come to life. I should have lost him had he come to five minutes later. I expected the others to come along behind and pick up the dead seal, so I walked ahead about five miles but, as the team did not come in sight in four hours, I went back to meet them. I met them three miles from camp and we camped there, as Charlie's eyes were troubling him and I feared a relapse. He seemed quite willing to go on but I think it best to take no chances. The crusted snow is also very hard on the dogs' feet.

"The seal was needed. I have never seen so protracted a spell of weather unfit for men or dogs as we have had since June 22nd, and this is the first seal that has come out of his hole, so far as we have seen. At the floe (before reaching Meighen Island) we threw away considerable blubber but kept enough to last until two days ago. At sea one can get seals in almost any weather (if there is open water) but inshore they come up only in warm and preferably in sunshiny, not very cloudy, weather."

A day or two after this when I was walking overland and the men taking the sled along the ice in the straits, they had the misfortune to have it upset into deep water. Most of the bedding and clothing got soaking wet. It was really a marvel that this had not happened before and still more of a marvel that it did not happen frequently after, for conditions under which one must travel over sea ice in summer are such that it might seem impossible to keep anything dry.

This is because in the spring the thaw water sinks to the bottom of the snowdrifts and begins to trickle along the ice, gradually eroding little water courses which grow deeper and wider day by day. This never leads to a very bad situation if the ice is of that year, but if it does not break up and float to sea towards the end of summer, the next frosts make of it the most wretched going imaginable the following year. Then the thaw water finds deep channels already made for it and by midsummer the ice is cut up into a network of channels, a few inches or several feet deep and separating ice islands of all shapes and sizes. If the ice is three or four years old these islands resemble mushrooms or champagne glasses—a narrow stem with a sort of wide table on top. If the ice is not so old this mushroom formation is not noticeable, but progress is a continual climbing up on such "islands" and plunging into the water beyond. Frequently the dogs have to swim and the sled must float buoyed up by sealed tin cans kept in the bottom of the load for that purpose. When the sled is actually in the water there is no danger of upsetting and the task of the drivers is to keep the dogs and sleds in the water most of the time, avoiding the ice "islands" and climbing out upon them only occasionally. The great danger is when the sled is crossing one of these islands, especially if there are rounded hummocks upon them as frequently happens. The sled is then likely to slide sidewise into the water. Indeed it is sure to slide, and the steersman's task is to see that just before it does it shall be turned in such a way that it goes in bow foremost. Sidewise, it will upset, as happened to us July 8th.

This condition of the ice is bad not only for traveling but also for seal hunting. If you approach a seal that is basking on the ice he will probably hear you splash, and the least splash will send him into his hole. Furthermore, it is practically impossible to crawl snake-fashion over ice of this sort. Thus we must make our living in July and August from caribou on the land or from the occasional seal that happens to lie near enough to land to be shot from shore.

July 12th I shot three caribou, the only ones killed in Amund Ringnes Island. That day we saw the first polar bear track we had seen since leaving Melville Island. Judging from two years of experience, polar bears are so rare on the west coast of Prince Patrick Island and in the vicinity of our new lands and Isachsen Land that they may be said not to exist there. As we proceeded south birds increased in variety. There were snow buntings, terns, old squaw ducks, and owls, in addition to the birds seen farther north. With caribou on the land, there were sure to be wolves, but we saw only their tracks.

July 14th we crossed the straits, which in this vicinity were about fifteen miles wide, and as usual ran a line of soundings. Bear tracks became more numerous. July 18th and 19th we stopped for two days near the southern end of Hassel Sound to take a series of tide observations, records ten minutes apart for thirty hours.

Caribou signs were more abundant in Ellef Ringnes Island than they had been east of Hassel Sound. Traces of wolves were also numerous. Most of these were of the ordinary kind, but in the mud on the beach we saw in various places the tracks of one animal that seemed to have smaller feet than any wolf should have. Of course, the pups are not large at this season but they should be with their mothers and going about in bands. This animal had been alone; some of its tracks were only a few days old and others several weeks old, so it had apparently been living in the vicinity.

After finishing our tide observations we continued south along the coast for about fourteen miles, taking compass bearings and making a survey, for we had found that the coastline had been determined only in the most general way by Captain Isachsen and that our observations would add considerable in the way of correction and detail. We were approaching land after crossing a bay when we came upon the skeleton of a polar bear. I suppose polar bears must die now and then of illness or old age, but the sight of this skeleton brought instantly the thought that the animal had been killed by men. An inspection of the bones gave no proof, for I could find none that had been broken by a bullet. The flesh was gone, having been eaten by some carnivorous animals, and several of the bones were not to be found. They might very well have sunk, for there was now a shore lead varying in width from a few feet to fifteen or twenty yards, separating the land from the still immovable ice.

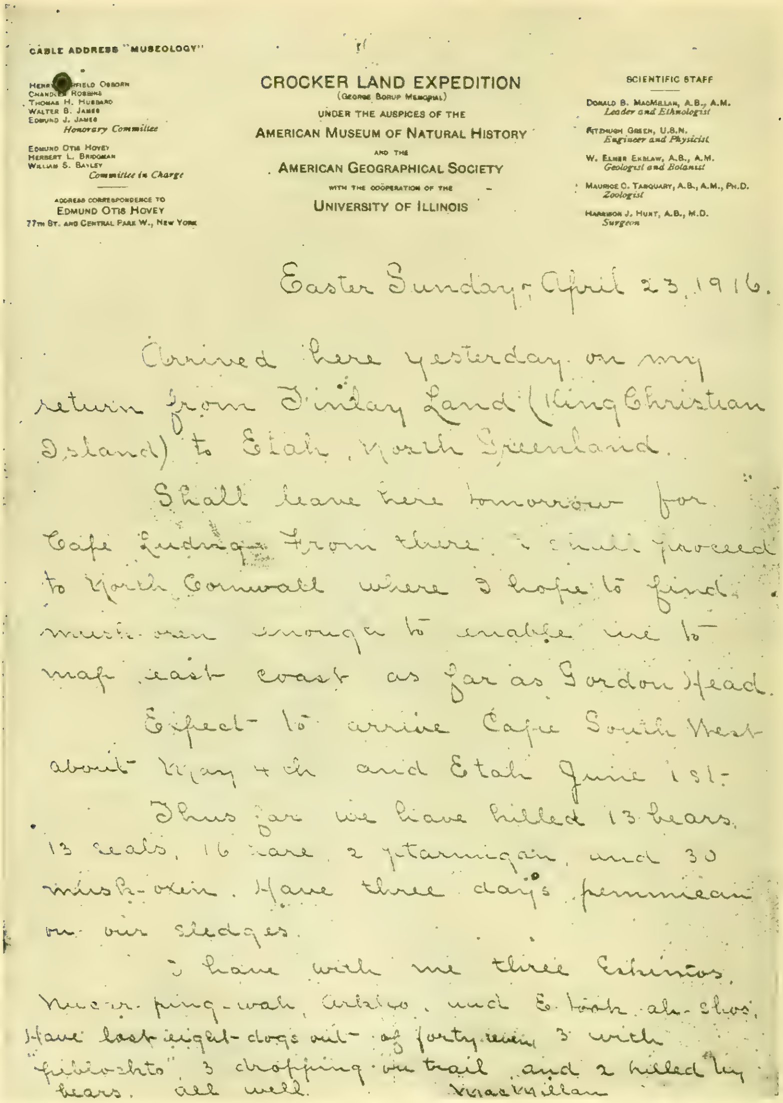
Before finding the bear's skeleton I had noticed a mound at the top of the point we were approaching. Presently we could see pieces of board sticking up. This was, then, a place that had been visited by white men.

I knew that Donald MacMillan's Crocker Land Expedition had its base at Etah in north Greenland, but I hardly expected them to be working down in this vicinity. Yet the distance from his base at Etah to the west coast of Prince Patrick Island by way of the sledge route is no greater than the distance from our base at Cape Kellett to the north end of Meighen Island, so that if both of us went equally far from home our fields of work would overlap by two hundred miles.

Even before we found the record I was sure that the monument had been built by MacMillan. His expedition and ours had purchased pemmican from the same packers and here were scattered

Our Camp on Meighen Island.

Taking Possession of Meighen Island.



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CROCKER LAND EXPEDITION
(George Borup Memorial)
UNDER THE AUSPICES OF THE
American Museum of Natural History
and the
American Geographical Society
with the coöperation of the
University of Illinois

SCIENTIFIC STAFF

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*Geologist and Botanist*

Maurice C. Tanquary, A.B., A.M., Ph.D.
*Zoologist*

Harrison J. Hunt, A.B., M.D.
*Surgeon*

Easter Sunday, April 23, 1916.

Arrived here yesterday on my return from Finlay Land (King Christian Island) to Etah, North Greenland.

Shall leave here tomorrow for Cape Ludwig. From there I shall proceed to North Cornwall where I hope to find musk-oxen enough to enable me to map east coast as far as Gordon Head.

Expect to arrive Cape South West about May 4th and Etah June 1st.

Thus far we have killed 13 bears, 13 seals, 16 hare, 2 ptarmigan, and 30 musk-oxen. Have three day's pemmican on our sledges.

I have with me three Eskimos, Nuc-ah-ping-wah, Arkio, and E-took-ah-shoo. Have lost eight dogs out of forty-seven, 3 with "piblockto", 3 dropping on trail and 2 killed by bears. All well. MacMillan

MacMillan's Record Found on Ellef Ringnes Island.

all about the peculiar red tins. MacMillan was a disciple of Peary's and the boards were chiefly from condensed milk boxes, and condensed milk was one of the four items of the standard Peary ration of pemmican, hard bread, tea, and condensed milk. The only other white men who could have been in this region were Isachsen and Hassel in 1901, and they would not have carried American condensed milk nor American rifles, the empty cartridges of which were scattered all about. The beacon was probably a conspicuous one when MacMillan built it out of substantial-looking chunks of hard earth, and placed probably on top a box into the corner of which a tin can containing his record had been fastened with bent nails. But since then summer had come on, the mud had softened and in part flowed away in the form of a semi-liquid, the heap had collapsed, and the box was half buried in the mud.

We were much excited over the neatly written record, which is here reproduced as a photograph. It was news—news of that part of the world's activities which interested us most, the activities of our contemporaries in exploration. It was East meeting West for the second time in arctic exploration, the other case being that of McClure and Kellett at Melville and Banks Islands in 1853.

As I already knew from talking with MacMillan and as this record showed, we were meeting here also a method of exploration different from ours and conducted in a country of different natural conditions and especially different resources. He had three Eskimos with him and no white men and was depending mainly on his Eskimos to do whatever hunting was necessary, while I had with me white men because I thought them better suited for the work. He had lost eight dogs and still had thirty-nine at his farthest. We had lost one and now had seven. Our one dog had died of disease and so had three of his. But he had been hurrying so much that between hard driving and perhaps short rations three of his dogs had dropped in their harness and had been either killed or left behind to die, while ours had traveled in such easy stages and been fed so well that they were continually fat and had suffered from nothing except occasionally from sore feet.

Evidently MacMillan had been using the Eskimo method of bear hunting, for two of his dogs had been killed by bears. It was perhaps no credit to us that none of our dogs had been killed by bears, for we had not even seen the tracks of bears until within the past few days. But our method of hunting them is the opposite of that of the Eskimos and involves no risk to the dogs. Our first concern when we know there is a bear around is to restrain the dogs and if possible to prevent their knowing about the bear until he has been killed. I have argued a great deal about bear-hunting methods with those used to employing dogs and have usually failed to convince them that any method can be so good as setting a lot of dogs on a bear to "hold" him till you get near enough to shoot. But it sometimes happens as it did with MacMillan that the bear is not the only animal to get killed. I have known Eskimos to hit their own dogs. In one case on the north coast of Alaska a man shot his favorite dog and never wounded the bear. Though our method of one man only going after the bear has no fuss nor danger to dogs, we have failed to kill only a small percentage of the bears we have tried to kill.

But if you want excitement, or what is sometimes called sport, there can be no comparison between the two methods. I have only once seen dogs follow a bear and that was unintentionally and with disastrous results, as will appear later in this narrative. But I have read of many such hunts. There is a scramble and uproar and excitement. The dogs bark while unhurt and howl with pain if the bear gets a blow at one of them that does not disembowel or otherwise kill him instantly. The men scramble after and there is a fusillade of shots. In a book for boys this method is infinitely to be preferred and for the movies I should think it would be admirable. Certainly our method is very tame. Sometimes the bear walks into camp and we lie in wait for him, shooting him when he is in a convenient spot for skinning. At other times we have to go afield to get him, but he either never sees us or else sees us without recognizing that we are dangerous. When one man does the hunting one bullet is frequently enough, and three are an excessive expenditure of ammunition. In the two or three cases where the killing of a bear has been exciting it has been the method of the bear's attack and not of ours that has made the excitement.

MacMillan's game list made us envious, for his chief items were animals that did not exist in the territory we had been exploring. Evidently his country was a hunter's paradise. He had killed thirty ovibos to the east and was hoping to find more in North Cornwall on his way back. I have not learned whether he did but he could have found others in southern Axel Heiberg Land and Ellesmere Land, both of which were within a week or ten days' travel from his monument. He had killed thirteen bears where we had never seen one, sixteen hares where we had not seen a single track, and thirteen seals to indicate that the only animal on which we were relying was also found in his district. Caribou were missing from the list but of these we had killed less than ten (my diary noted only six).

We speculated much on the obscure passages in the record. In saying "Finlay Land (King Christian Island)" it indicated that these were indeed the same land and in that respect the Admiralty chart was right. But the record said nothing about the extent of the land and left unsolved the problem of whether Findlay Land and our Borden Island were different parts of the same connected whole. We were selfish enough to hope that he had not gone quite far enough to find out, leaving that discovery for us, but we wished we knew how far he had gone so as not to delay in the needless survey of what he had already surveyed.

Around MacMillan's monument were the tracks of the "small wolf" that we had noted around our sounding place and on the beach north and south of it. The explanation now seemed to be that this was not a wolf at all but one of MacMillan's dogs which had not died on being left behind on the trail but had revived after resting, had followed the trail to the monument, and had probably lived a long time on the bear carcass. Since then he had been able to make his living on lemmings and birds' eggs and was doubtless somewhere inland. We kept a sharp watch, so far as the weather allowed, while we were on or near Ellef Ringnes Island, hoping to find him and be able to take him with us. But the only souvenirs we were able to carry home were an old felt hat which we picked up on the ice near the bear carcass, and the scattered cartridge shells, tin cans, and box boards.

The boxboards were a godsend. When you wade knee-deep and hip-deep through ice water most of the day a dry camping-place is especially desirable, but impossible to find. Some days the sun shines and the ice is wet from thaw water; other days it rains and then it is if possible wetter; if snow falls in summer it is in the form of slush. There is no part of one's equipment more important than something which will keep the bedding from contact with the ice. We already had half enough boards for this purpose and MacMillan's gave us enough more so that thereafter we could keep our skins from contact with the ice. Previously we had used our caribou skin bedding in three relays, sleeping on one while the other two were drying. This would have worked well in sunshiny weather but with the continual fogs and rains it worked badly and most of our bedding skins were by now thoroughly rotten. Still, we had always been able to keep our sleeping bags dry—except when the sled upset—and to sleep in them comfortably every night. But it had been a hard struggle.

We rebuilt MacMillan's cairn with mud and tin cans, for we grudged to leave behind any of the boards except a sliver to which we fastened the same can that had contained MacMillan's record. It now contains a record reading as follows:

"July 20, 1916.

"Arrived here from the north at 8:10 P. M. local time to-day and found a cairn of earth with tins and a wooden box on top. In one corner of the box we found secured by bent nails a Kodak film tin sealed with tape. This contained the following record, written on a letterhead of the Crocker Land Expedition (George Borup Memorial.)

(Here follows copy of MacMillan's Record:)

"We are taking the original of the record and leaving this copy in its place, contained in the same tin from which we removed MacMillan's record. All boards that are here we are taking to use under our bed skins on the ice, otherwise we are rebuilding the cairn of the tins it contained and enlarging the heap of earth.

"We are on our way south from an island that has its north point about North Latitude 80° 10′, about 5 degrees of longitude east of Cape Isachsen. We intend to follow the east and south coasts of Findlay Island to determine if it is one land with that discovered by us in 1915 north of Prince Patrick Island. If we knew that MacMillan had finished mapping certain parts of Findlay Island and had omitted others, we would try to do what is left, but for lack of information we may unintentionally duplicate his work.

"We intend to spend the summer in the land found in 1915, if we can reach it, putting up meat for sledge provisions for the ice exploration of the spring 1917. Men, sleds and dogs (7) all in good condition but dog harness getting rotten from being continually wet.

WITNESS: "For the Canadian Arctic Expedition,
Karsten Andersen, Vilhjalmur Stefansson,
Harold Noice. Commander."

Events of the next few days cannot be understood without a careful look at the map. We had the latest and most authoritative Admiralty chart No. 2118, entitled "Discoveries in the Arctic Sea," and containing the annotation, "With corrections to 1902." This meant that it was now in the form it had after Captain Sverdrup's additions and corrections had been incorporated into it. The map we publish on the opposite page is substantially identical with the Admiralty chart, but to be sure there is no error of transference we have preferred to use Sverdrup's own chart, as shown in the second volume of "New Land" by Otto Sverdrup, New York, 1904.

The part of this map which interests us especially at present is called King Christian Land on Sverdrup's map, although the island of identical outline is called Findlay Island (King Christian Land) on the Admiralty chart. The history of this island up to the date of our arrival is as follows: On April 27, 1853, Sherard Osborn in command of a sledge party in search of traces of Sir John Franklin, was near the northwest corner of Bathurst Island and saw land on the skyline to the northwest. Under date of April 28th he says in his diary: "Saw the new island seen yesterday bearing NNE. about twenty miles distant and covering ten degrees of the horizon." *

From bearings and other notes taken by Lieutenant Osborn there was published in connection with the report of Sir Edward Belcher's expedition of which Osborn was a member, a map showing "Findlay Island" and "Patterson Island" (sometimes spelled Paterson, and Findlay has on some maps been spelled Finlay). Patterson Island was indicated as very small and Findlay Island to the west as somewhat larger, but both were dotted in, showing that the exact location and northward extent were unknown.

The charts were in this condition when in 1901 Sverdrup sent Isachsen and Hassel to survey land to the west which they had sighted the previous year when surveying the southwestern part of Heiberg Island. Turning to Sverdrup's "New Land," Vol. II, p. 296, we find a brief account of King Christian Island, and so far as I know the only published account, for in examining the four-volume scientific report of the expedition I have been able to find no material additional information. "In the evening they (Isachsen and Hassel) saw land in the west and southwest, decided to drive west, and arrived the next day at Nathorst Peninsula (since called Cape Nathorst), where they found a good deal of vegetation and the tracks of reindeer coming from the south.

"When they turned out on April 27 they saw west of them a land extending as far to the southward as the eye could see. This was named 'King Christian's Land.' Its north coast appeared to be rather low, but the east coast fell away so abruptly that no snow could lodge on the cliffs."

It would seem that if Isachsen's party never visited King Chris-

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* "Further Papers Relative to the Recent Arctic Expeditions in Search of Sir John Franklin," London, 1855, p. 200.

tian's Land * and had no information other than what is recorded, King Christian's Land should have appeared on the chart merely with its north coast dotted in, somewhat as Osborn had dotted in the south coast of Findlay Land. There would then have intervened between the north coast of Isachsen's discovery and the south coast of Osborn's a blank area of more than seventy miles. But our Admiralty chart, presumably copied from the map published with Sverdrup's "New Land," showed the coast detail and topographic shading as indicated in the photograph (see page 532). This we took to mean that the land had been carefully examined, which led to the reasonable assumption that King Christian's Land of Isachsen must be taken as one with Findlay Land of Osborn.

We had no doubt that this was all correct, especially as MacMillan's record said he was returning from "Findlay Land (King Christian Island)."

It seemed probable that the point on which MacMillan had erected his cairn was what Isachsen intended for Cape Nathorst. We could see land to the west and southwest, but according to the chart it ought to extend farther than we could see and we assumed that it was low and below the horizon because of distance.

While at the cairn we found another bear skeleton, and on leaving discovered a third. Evidently MacMillan had had great luck with bears. The leg bones of all the skeletons were missing.

On leaving MacMillan's cairn, or Isachsen's Cape Nathorst, we were compelled to go some distance east before we could cross a lead that ran either towards Amund Ringnes Island or North Cornwall. We might have tried to travel southwest so as to strike King Christian's Island (according to the map) at the nearest point. But the direction of various leads that were difficult to cross made our course more southerly, so that for the first ten or twelve miles our average course was somewhere between southwest and south from Cape Nathorst. The weather was thick most of the time but by the map we were headed just right, for what we wanted to do was to pick up the coastline where the detail put down by Isachsen meets the hypothetical dotted line connecting King Christian's Land with Findlay Land. But when on the third day the leads invited, we traveled in a direction between west and southwest a distance of thirteen miles. Now we began to be puzzled,

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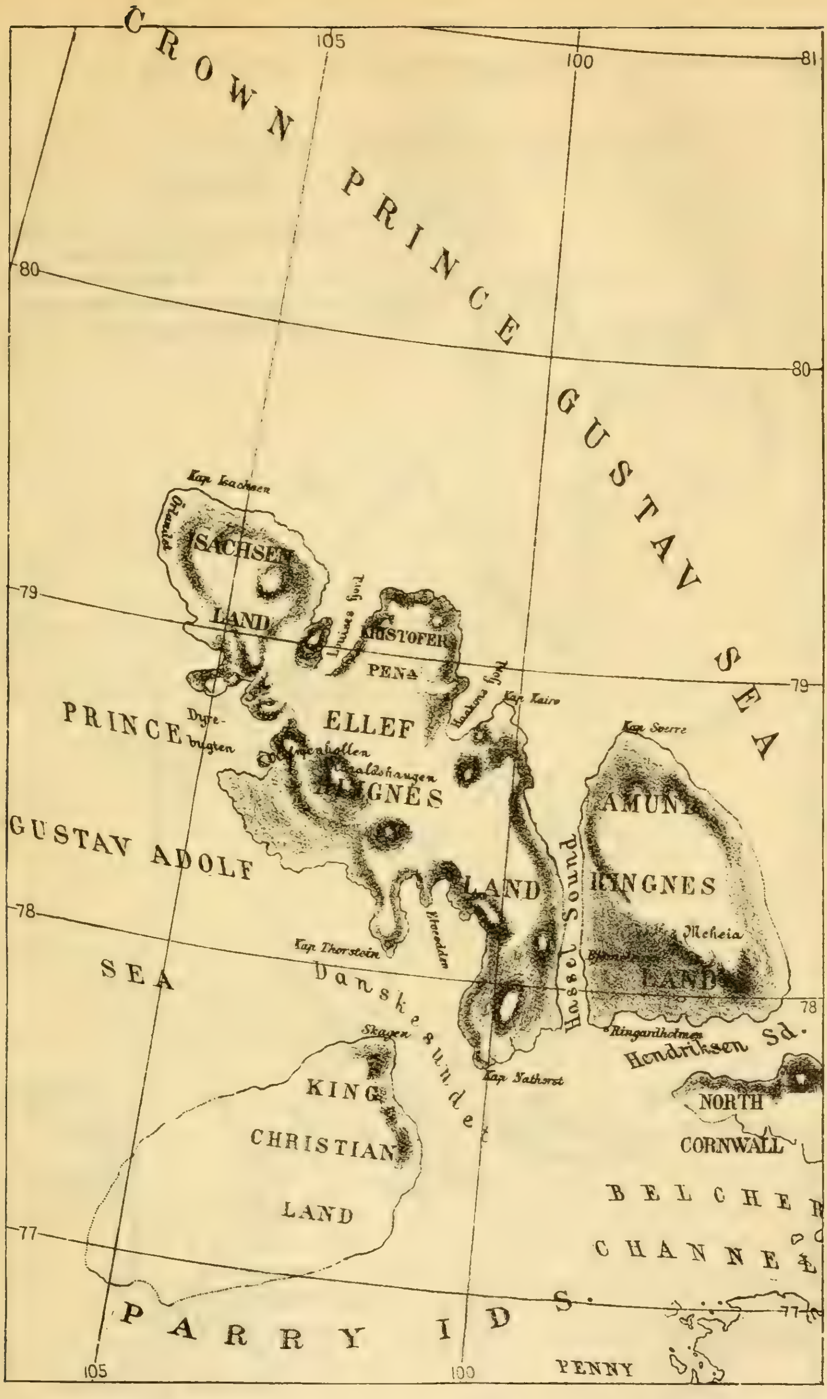
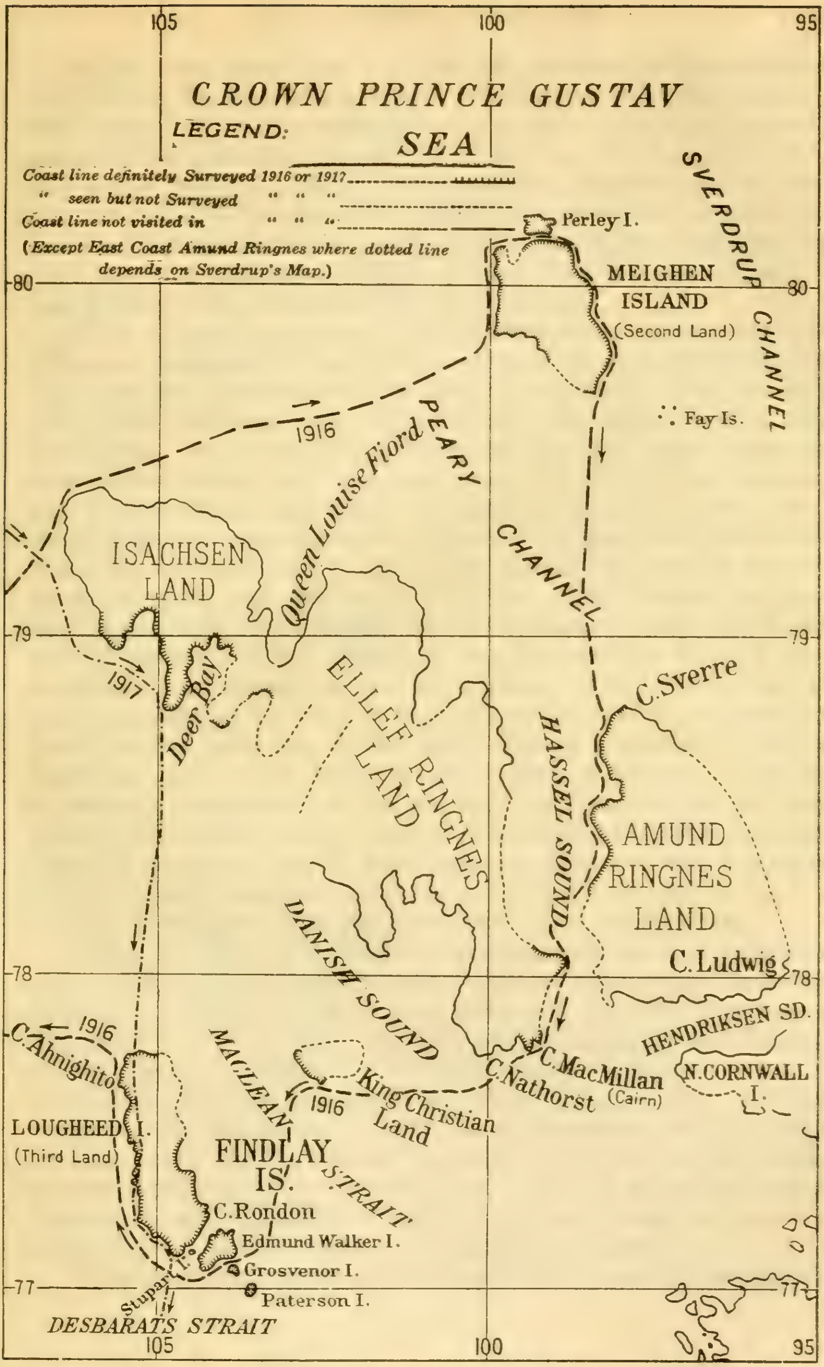
* Since the above was written I have learned through a letter from Captain Isachsen that he did not visit King Christian's Island, but merely saw it from afar—from Ellef Ringnes Island.



THE RINGNES AND CHRISTIAN ISLAND GROUP AS GIVEN IN SVERDRUP'S "NEW LAND," 1904, AND FOLLOWED TO THE PRESENT BY THE BRITISH ADMIRALTY AND MAPMAKERS GENERALLY.



The Same Region as Shown on the Opposite Page —. Corrections Made by the Canadian Arctic Expedition During 1916 and 1917.

for in the clear spells land and land sky showed to the northwest but none to the west or southwest. Apparently we were traveling into a deep bay with a peninsula on our right. We could scarcely reconcile this with the map, but so it must be. Next day we traveled twelve miles in a direction ten or fifteen degrees south of west and the situation became more difficult to understand, for now the land was plain and not far away on the right while ahead was no land nor even land sky. On the theory that this was a bay, it was getting to be an extraordinarily deep one.

With all our experience of the inaccuracy of polar maps, we were yet counting the land to the north of us as a peninsula and expecting any moment to find land to the west, when on July 25th, after traveling eight miles farther, we camped half a mile from land. So far as the evidence of our eyes could show, we were opposite the most southerly point. It was a fine sunshiny day and we should have liked very much to go ashore, but a quarter of a mile of open water lay between. It must have been very warm on the land for it was warm enough on the ice for one mosquito to fly out and pay us a visit. Only Charlie saw him but Charlie is familiar enough with mosquitoes to make the identification certain. I was willing to take his word for it, for I have confessed to a prejudice against mosquitoes. They are bad enough in certain settled portions of the country where half a dozen are likely to find their way in the night through a window into your bedroom. But in the Arctic in the vicinity of the circle they are a veritable plague such as no one can conceive who has not been there. When you get five hundred miles within the circle they are, however, no worse than in New Jersey or Missouri and it is probable that they are never seriously troublesome in any of the Canadian islands more than 500 miles north of the arctic circle.

After two days of continued traveling west we were compelled to go two miles southwest to cross a lead running in that direction; then we traveled northwest nine miles and the situation was at last clear. We had passed the west end of an island and the land all lay to the northeast. The great King Christian's Land of Sverdrup's map and the Admiralty chart does not exist. In clear weather, from the tops of the highest ice hummocks, no land could be seen to the west, to the northwest, southwest or south, or indeed in any direction except the northeast. We did see indications of land to the north, possibly a small new island, though we took it to be the "loom" of Ellef Ringnes Island far to the north.

This shows how much safer it would have been for Isachsen to do as Osborn did and dot in his land, restraining his imagination from connecting it with Findlay Land and especially from supplying the detail of curved coastline and topographically shaded interior. As to the topographic shading, it must be said that there is in the scientific report of the Sverdrup expedition the statement that "the shaded lands are those surveyed by this expedition," and that there is no intention to indicate contours by the shading but merely to show that these are the lands discovered and explored as distinguished from the unshaded ones previously known. Still, why should there be several lines of shading leading to small and isolated eminences in some cases, as in Ellef Ringnes Island? To any one familiar with the ordinary conventions of map-making, these are ways of graphically indicating elevation, and so it was evidently taken by the British Admiralty who faithfully copied all the shading.

I have since learned to interpret correctly MacMillan's reference to "Findlay Island (King Christian Land)" and consider that thereby hangs a rather appealing story. MacMillan had made a very excellent journey from Etah across Smith Sound and Ellesmere Land, past the south end of Axel Heiberg Island, through Hendriksen Sound and thus past Cape Nathorst to probably the east end of King Christian Island as it now stands revised. He arrived in thick weather which kept him in camp for two or three days. Meantime he had leisure to think of how long a way it was back to Greenland and how early in the season Smith Sound would perhaps break up, preventing his return. He had estimated that in order to cross Smith Sound safely he would have to be back by the first of June. The purpose of his journey had been to complete the outline of King Christian Land, connecting it with Findlay Land (if, like us, he had taken the chart at its face value), but he now concluded that what with the small amount of pemmican on hand and the rapid advance of the season, he had better hurry back while sledging conditions were favorable and Smith Sound crossable. It is almost tragic, as it seems to me, that he started on his return journey without having the opportunity to climb to the top of some hill in clear weather to see for himself that he was on a small island with sea ice all around, instead of on the northeast corner of a large land, as he supposed himself to be.

## CHAPTER LIII

### THE DISCOVERY OF LOUGHEED ISLAND

I DID not want to break into the continuity of the story about King Christian Island till it had been finally disposed of. Now comes a diary record for July 22nd, which I reproduce in so far as it relates to an incident of that evening:

"New bear habits, so far as my experience goes, came to light to-night. We are camped by a lead about five yards wide which we had to follow S x E one mile (stopped then for longitude observations). When Noice and I had both gone indoors and Charlie was about to come in, he noticed something resembling a chunk of ice move rapidly across the lead a hundred yards south (wind about west, or a little south of west). He saw by the glasses this was the eyes, ears and nose of a bear. The bear had evidently seen us first and when I came out he had commenced a careful stalk of us. He would swim along eight or ten yards, then stop dead and slowly raise his eyes (and ears, for that he could not help) over the edge of the lead and look, but only high enough to see my head—I was behind the sled, resting my elbows on the load, and Charlie was holding the dogs, while Noice was at the bow of the sled, a little lower than I. The dogs never saw him, though they had a full view of that part of the lead where he was.

"It took him about ten minutes to come a hundred yards. When nearly opposite our tent and about fifteen yards from us, he slowly raised his forequarters upon the ice which was about six inches over water level. Then swiftly but without a splash or other noise he brought his hindquarters up and made a dash straight for me. I had told Noice to shoot him as soon as he was well clear of the lead, but he was coming so fast I did not care to take a chance on one of our guns alone, which might fail to go off—or else the bullet might not hit. I therefore fired simultaneously with Noice.

"At first I thought he was mortally wounded and probably he was, but after rolling on his back he half got up, facing the water. As it is difficult to haul a dead bear out of water, I told Noice to fire again, but his gun refused to go off. (We found later that sand on the cartridge, or rather mud, prevented it entering the chamber. The Winchester safety device—the pin under the trigger guard—therefore prevented the hammer from falling when the trigger was pulled.) As I feared the bear getting into the water—he was almost there—I fired again, this time hastily, hitting him in the rump, without serious immediate effect. As he gave a side view I put a third bullet through the heart—altogether pretty poor shooting. Had I been depending on myself alone I would probably have chosen my opportunities better.

"The tactics pursued by the bear were excellent seal-hunting tactics, but he showed poor judgment in taking no warning from our talk which was in ordinary conversational tones, or from our tent and strange gear. Had Charlie not happened to see him and had we all been indoors, even though not asleep, I have no doubt he would have had one of our dogs before he realized it was not a seal and before we had time to get a hand on a gun, though we always have the guns at the tent door. Evidently he was traveling along the lead, swimming, and it seems clear no ordinary basking seal would, by anything but accident, have discovered him before he was between it and the water. He was fat, which spoke well for his success as a hunter. Probably a two-year-old bear."

Though the substantial middle of Findlay Land or King Christian Island on the map had disappeared, I had no doubt that there was land in the direction where Osborn had dotted in his discoveries. Heading south we traveled in that direction for twenty-five or thirty miles and I have never seen traveling conditions worse. In some cases the dogs had to swim continuously as much as half a mile at a time, towing the sledge behind them. I had to walk ahead picking a trail and especially carefully now, for there were holes in the ice underneath into which the dogs would have swum as readily as where there was bottom. Part of the time the water was shallow enough so that the men could ride but at other times they had to wade so as to allow the sled to float and thus prevent our gear from getting wet. The stray ice islands here and there were worse than the water. We would no sooner be up on one than we had to plunge into the next water channel, and there was always the same danger of the sled sliding sidewise and being upset. The narrow channels were the worst except when they were so very narrow as to be jumpable for the dogs and bridgeable with the sled. With a fourteen-foot sled an eight or ten-foot channel was the worst possible, for then the sled would take a dive, bunting its nose at or below water level into the next "island" and that very hard, for the dogs scrambled ahead at a great rate trying to get out of the icy water.

When the sun was shining they splashed and swam willingly enough, but on colder days it was my task to drag the leader against all his strength off each ice island and into the water. When the team was once in the water they behaved quietly and everything went well so long as their feet touched bottom, but when they began to swim the rear dogs, which were the largest and usually the fastest swimmers, would catch up to the ones ahead and all would be bunching up around me. We were using the tandem type of harness which is suitable for all conditions of sledge travel except swimming, and we usually found at shallow water or climbing out on an island that the team was all tangled up and had to be straightened again.

At one stage we thought of striking a direct course for Cape Murray and traveled in that direction a dozen miles, but the going became so bad as to be virtually impossible and we had to turn back. This we did, thinking that a lead we had seen running south from King Christian Island might be a widened tide crack running perhaps all the way across to Findlay Island. The diary narrates: "We shall turn back from here to the lead we left two days ago. We have now crossed Findlay Island as mapped on Admiralty chart No. 2118 and found an average depth of over two hundred meters (maximum depth 315 meters) while all signs of nearby land are wanting. The lead we were following may run from King Christian Land to Findlay Island, at least it trends that way the first ten miles or so. The going we are in here now may be called impossible—the water deep and the mushroom islands so high that a man who has been wading needs to put his hands and knees on them to scramble out. It is very hard to get a sled on one, for most have not room on top for the team to pull and there is not often room for the sled and dogs after you do get on top."

At this season the only passable traveling conditions are found along the edges of the long leads. Some leads vary greatly in width and are crooked and may come to an end, but there is usually a nearly straight lead running between the headlands where two islands approach each other most nearly across a strait. The lead to which we turned back proved such a one, although it ran in a course more easterly than we desired, probably towards some cape on Bathurst Island. We had advanced two days westward and it took us two more days to get back to just about where we started from.

Now came an unusually cold spell and we had to break through a quarter of an inch of young ice on top of the water. The dogs could not advance at all, wading or swimming, until a way had been broken through this ice. August 1st it was warmer but there were heavy showers with periods of drizzling rain between, and this was one of the few days on the ice when we were soaking wet from top to toe. Before going to bed we partly dried our coats by wringing the water out of them, but our sleeping bags were dry and getting into them was something between a pleasure and a delight. It seems to be a law of human nature that when you are in good health the relief from discomfort becomes so keen a pleasure that it compensates for whatever has gone before. Here was the most uncomfortable trip that any of us ever made in the Arctic and still I feel sure that my companions would be no more reluctant than I to do it over again. There is not a single complaint in my diary, nor is there one, I feel sure, in the diaries of either of the others. This was not heroic restraint, for the discomforts of each day were actually forgotten in the comfort of the following camp. We did feel reluctant occasionally to start in the morning. There are few things less inviting than dressing in wet clothes. Somehow it seems to help to have dry things to put on even if you know they are going to be soaking wet in ten minutes.

If there were any intimate connection between such ills as rheumatism and being continually soaked with cold water, even though you get warm and dry between times, then surely we should have suffered. None of us has felt a twinge as yet, but of course it is possible that a dozen years from now one or another of us may come down with sciatica.

We had to zigzag so much that it was hard to keep careful reckoning, and the continually cloudy weather made observations difficult. We were thirty or forty miles south and King Christian Island had long since sunk beneath the horizon when the day after the rainstorm, August 2nd, we sighted an island to the southwest. After a few miles of advance two other islands a little to the left appeared. We did not at first know whether they were lower or more distant. They proved lower. It took us the rest of that day, all of the third, and seven miles of travel on the fourth to get within half a mile of the largest island. We camped on the ice for we could not at once find a crossing and were not, in fact, sure whether we cared to land. On foot I was able to make a landing after having followed the shore lead for half a mile. From a high hill caribou could be seen on the middle and smallest island, so I crossed over and shot seven out of nine fat bulls.

Obviously seven fat caribou was much more than we could carry. The reason for killing them was that on account of the deep water on top of the ice it was now almost impossible to get seals, and the ice itself had been moving and cracking in various directions during the last few days, so that I was afraid that the complete summer break-up might come any day, possibly marooning us on one of these small islands. I was so much worried by this instability of the ice that I should have gone ashore and made a summer camp on the largest of the three islands had I not seen from the top of it a still larger one to the northwest. We loaded seven or eight hundred pounds of boneless meat and fat on the sled and proceeded towards this new land. We knew it was a risky proceeding for, although the sled was strong enough to stand almost any kind of load in ordinary winter going, no sled could stand indefinitely the repeated shocks of diving off one ice island into the next, coming up each time with a shock like the blow of a thousand-pound hammer.

Our landing-place should have been the nearest point so far as the safety of the sled was concerned, but we would have to live during the summer on caribou and I was reluctant to camp near a promontory from which land game would have to be sought at a considerable distance. We accordingly tried to follow the coast northwestward and did so for two or three miles. It was an especially heavy shock that finally broke the hickory fender on the front end of the sled, which decided us to go ashore and call sledge travel for that season ended. We found no place where we could land except by water. Having this year no tarpaulin intended to convert the sled into a boat and relying instead on sealskins, we inflated these each into an air bladder having a buoyancy of two or three hundred pounds. Four of them lashed to the sled converted it into a raft. It took the men several hours to inflate the sealskins and make the landing, and I got ashore meanwhile over some ice that was far too rough for the sledge to negotiate and went in search of caribou. We had seen six with our glasses the day before and I had them skinned and cut up by the time camp was well pitched. This was on August 9th.

We now had leisure to take good astronomical observations and to make up our minds as to how to reconcile these lands as we found them with the observations of Osborn. The first island was clearly his Findlay Land. It appeared to be six or seven hundred feet high and one or two hundred feet higher than the larger island to the west where we were now spending the summer. The most easterly island is undoubtedly his Paterson Island. I did not visit it but feel sure that it is about three hundred feet high and less than three miles in diameter. The middle island where I killed the seven bulls is even smaller and not much more than half as high. It was probably not seen by Osborn at all or was taken for a low eastward extension from Findlay Island. Findlay Island is ten or twelve miles in diameter, a fertile island with beautiful green slopes covered with grass or with lichens and moss, according to the abundance of moisture and the character of the soil. Between it and Third Land is a little island scarcely more than a sandbar. Caribou crossing by way of it appeared to wade most of the time, so that the channel is here mainly shallow although there may be deep places. If so, they are probably near the Findlay Island shore.

Third Land (which I have since named Lougheed Island) proved in most respects a delightful summer resort. There was not a single mosquito. The country was rolling hills, well covered with vegetation, although eight or ten miles to the northwest was a considerable area of very sticky, wet clay, and with every stream heavily impregnated with some chemical that made the water undrinkable if you were afraid to drink it, and disagreeable in any event. The island's length is about forty-five miles, its main axis running a little west of north, its average diameter perhaps twelve miles. One wolf appeared soon after our landing but he must have left the island. Absence of wolves and mosquitoes, together with an abundance of vegetation made the caribou the fattest for the season that I have seen anywhere. There were perhaps three hundred of them on the island, which was many times more than we needed.

The only difficulty was fuel. Of every resinous plant known to me as good fuel not one was found. Neither did we find willows. I made experiments with moss and with dried mushrooms. They would not burn, probably because we did not have a long enough time to dry them between the frequent rains. A few seals were out on the ice but the chance of getting them was small, for they would surely have heard a man splashing in the deep water even though he might have had will power to wriggle in auktok style across ice patches and the shallower channels. Then there was the continual threat that the ice might move. The movement we feared was not with any local wind for we could have guarded against that; but there were plainly strong tide currents, for along the beach the ice kept shifting back and forth. Once we thought it was all going but it stopped after a few dozen yards. It would have been no fun for a seal hunter to find himself drifting off with that ice. A whole party with a sledge and outfit might have enjoyed it more, but a man alone would have found it an unpleasant adventure.

So the only thing to burn was caribou fat and boards, chiefly those picked up at MacMillan's beacon. We stuck them up on edge to dry in the sun and wind and protected them from the rain. Most of them were about three-eighths of an inch thick and from eighteen inches to two feet long, and we made them into standard fuel portions consisting of a piece about three inches wide. One such piece whittled or split and burned with about a quarter of a pound of caribou suet, sufficed to cook a meal. But only meals of a certain sort. The heads of caribou are the best parts and thereafter the vertebræ, ribs and briskets, but all these are bony and with scarcity of fuel we could not afford to boil bones. For the only time in my northern experience we threw nearly every caribou head away at the place of killing. We removed the bones from the rib meat and to that extent were able to eat the meat we liked, but apart from that we lived mainly on ham and shoulder meat cut into pieces about the size of sugar cubes. Meat that is cut into small pieces and put over the fire in cold water is done when it boils or a little before. For the first part of our stay on Lougheed Island we used to cook two meals of this sort daily, but later when we had been able to dry some caribou meat to eat we used to have but one cooked meal.

The long weeks of wading through ice water before landing on Lougheed Island and the summer spent there with inadequate fuel came nearer to being hardship than any of my other experiences in the North. But Charlie and Noice were cheerful the whole time and I have never heard a word of complaint about the climate or the country or the food, though we all talked rather wistfully about the possibility of finding something to burn. For equanimity they were on the whole the most admirable companions I have had on any sledge trip.

We had come ashore because we feared the break-up of the ice and the break-up, too, of our sled. But other purposes were to explore this land thoroughly and to get a good rate on our watches. Occasional days were beautifully clear and permitted extensive time observations, those farthest apart having an interval of twenty-three days.

During the middle of August Noice took care of the camp while Charlie and I made a trip of several days with pack dogs exploring the island. From hills near the southern end we were able to get bearings of points on Bathurst Island. From other hills north of the middle we were able on a clear day to see King Christian Island and from near the north end were even able to see cliffs which probably were on Ellef Ringnes Island. To the west we got bearings of two or three points on Borden Island. To the southwest Melville Island was not in sight. As with our other lands, we found considerable evidence of recent uplift in the form of a sprinkling of seashells and some raised beaches of the ice-built kind. There was one track of a polar bear but evidently these are not numerous west of the meridian of Hassel Sound until (as we learned later) you get south into Byam Martin Channel between Bathurst and Melville Islands.

The summer brought but one flock of ptarmigan and the ducks were only king eiders and old squaws. Plovers probably do not go that far north but there were sandpipers, snow buntings, owls, and the same three kinds of gulls noted farther north. There were no traces of ovibos either past or present. It goes without saying that there were no signs of Eskimos. We found no such signs anywhere farther north than the shores of Liddon Gulf on Melville Island.

The few zoölogical specimens collected were chiefly such small things as could be preserved in alcohol in the one-pound malted milk tins, but it seemed so interesting to try to get a caribou specimen from a district so far from where any such specimens are known to have been taken that I decided to try it. One night I killed a young caribou while the boys were asleep, took all the measurements carefully, removed the skin according to the ideas of the taxidermist, and carried it home along with all the leg bones. On arrival I woke the boys and we had breakfast together. Then Charlie left with the pack dogs to fetch the meat while I went to sleep.

Noice under the influence of my lectures and the pressure of circumstance had given up most of his views on meat and how to eat it, but he had persisted in preferring boiled fat caribou meat to the raw marrow which I had told him was much better. Inside this caribou skin the leg bones were wrapped, the bones still fastened together by their ligaments and attached by the hide at the hoofs.

Noice unrolled the skin and thought he would make himself useful by separating the bones from the hide. It then occurred to him that he would try and see if raw marrow was really good and so he broke the bones for the marrow. I had taken so much pains with getting this specimen home in good condition that when I woke it was some time before I could see the amusing side of the incident and console myself for the ruining of my zoölogical specimen with the reflection that Noice had overcome the last of his food prejudices.

A few days later I took another specimen in the same careful way. This time it was safe from Noice and indeed he and all of us looked after it carefully for some months. But eventually somebody was forgetful and one night the dogs ate it up. Edible specimens are difficult to carry home when the journey involves several months.

On Lougheed Island at the main summer camp we took tide observations every ten minutes for a period of thirty hours. This completed a series of tide observations scattered at strategic points remote from places where observations of tides had previously been taken. They have some value but, of course, not as great as if the series could have been thirty days instead of thirty hours in each place.

Castel had been directed to make a depot on the south shore of Borden Island or on the south shore of Findlay Island. When I gave those directions I had in mind the big Findlay Island or King Christian Island of the maps and was even of the opinion that this big land might be one with Borden Island. We could see now that it must have been difficult for Castel to decide how to follow these instructions when all the topography was so different from what we had expected. Still we looked minutely for traces of the depot or a message on the shores of Lougheed Island. When we found none we began to fear that we might have overlooked a depot on the south shore of (the present) Findlay Island.

Towards the end of August it began to snow occasionally and on the third of September, after getting a last excellent set of time observations, we started the autumn sledge travel. The shore lead was not yet frozen, so we had to go overland. The only difficulty was to find the way across a few precipitous ravines. Some of these ravines, especially if they faced north, had snowdrifts in them which had lasted through the summer and which probably last through most or all summers. In a sense these are therefore glaciers, but none of them can be seen from a distance and none aggregate in area more than a few acres so that we always spoke of them as snowdrifts. Two or three had streams of water running through a vault underneath, but most were bisected by rivers that had cut them to the bottom leaving a remnant of snow or granular ice on either side of the ravine.

A mile or two back of camp was a hill three or four hundred feet high which we had used during fine weather as a lookout for any lands farther off than the ordinarily visible northwest tip of Bathurst Island.

On leaving our summer camp we built a sort of cairn of mud and tin cans on a knoll about a hundred yards away. In it is a note in a tabloid tea box protected by an inverted lard pail. The note refers to our record on Lookout Hill. The Lookout Hill record is in a beacon which is a conical earth heap about three feet high with a ten-pound malted milk tin on top. In a small round tin inside this larger tin is the record, while the big can is otherwise nearly filled with stones to make it more stable.

"Approximate Latitude 77° 09′ 30″ N.,
Approximate Longitude 0° 32′ E. of Cape Isachsen,
September 3, 1916.

"The below members of the Canadian Arctic Expedition have spent here the interval from August 9th to September 3rd, waiting for snow and ice to continue sled exploratory work. A support party commanded by Aarnout Castel and consisting, besides him, of the Eskimos Natkusiak and Emiu, left us at Cape Isachsen June 3rd to find, if one existed, a sea passage between Findlay Island and the land discovered (Borden Island). They were to proceed then to join Storkerson's party who are putting up meat in Melville Island, and Natkusiak with a party was to return thence to Cape Murray to put up meat near N. Lat. 78° and W. Long. 117° for ice exploration in 1917. We followed shore floe northeastward and found new land June 13 near N. Lat. 79° 45′, Meridian Distance, east of Cape Isachsen about 4° 15′. Went around this island from the southwest corner, past the north end to the southeast corner. Found north end about 80° 10′ N., about 4° 43′ east of Isachsen. Left southeast corner that land 28th, landed on Amund Ringnes Island, Hassel Sound, July 3rd, N. Lat. 78° 44′. Mapped east coast of sound to about 78° 08′. Crossed sound (about 15 miles wide) and mapped west coast sound southward. Stopped for thirty hours' tidal observations July 18-19 near N. Lat. 78° 04′. Some thirteen miles south of here we found a cairn and record of the MacMillan Expedition written by MacMillan April 23, 1916. He was then on his way from King Christian Island to North Cornwall by way of Cape Ludvig. He reports his party all well. Proceeded from here to King Christian Island. Found its most southerly point to be about N. Lat. 77° 41′, about 3° 33′ east of

Isachsen. The coast trends north of west from there and the west tip of the island is probably not over fifteen miles more westerly. Were prevented from landing or going farther west by open leads and water on ice. Proceeded southerly and landed on Findlay Island August 4th. The next day moved to the new island between Findlay and Paterson to get some deer meat, and August 8th proceeded to this place where we decided to await the freeze-up. Findlay and Paterson Islands first sighted August 3rd, and this island August 5th. Findlay Island is also separated from this by a tiny island. Have explored this island about twenty miles NNW and find its main axis runs about NW x N. The west end of Bathurst Island bears from here about twelve magnetic. Are leaving here by sled to-day overland by first adequate snow. Shall leave this island so soon as ice conditions allow and proceed according to circumstances to Cape Murray on the west side of the land discovered last year or to Melville Island, Liddon Gulf, to look for Storkerson's party or messages from him. Have instructed *Polar Bear* to try to reach Winter Harbor to spend there winter 1916-17, or at Dealy Island. Men, equipment and dogs (7) all well.

"Have taken formal possession of this land for the Empire on behalf of Canada in the name of His Majesty King George V, according to authority especially vested in me for that purpose.

WITNESSES: "Vilhjalmur Stefansson,
Harold Noice, September 3, 1916."
Karsten Andersen.

Since my first year in the Arctic I have known that thaw water on top of sea ice (as mentioned *ante*) is always either nearly or quite fresh so far as can be determined by the sense of taste. I had found also when traveling along leads that enough thaw water runs into them so that you can drink directly out of the sea. The lead which we followed southward between King Christian Island and Findlay Island seemed to have about twelve or fifteen feet of fresh water on top of the salt. This estimate I make from having on one occasion killed a seal which sank but remained suspended in plain sight below. We had a bamboo pole nine feet four inches in length and by lying on the edge of the ice and sticking the whole pole into the water and my arm up above the elbow, I was able to touch the seal where he remained suspended, presumably at the meeting of the fresh and salt water strata.

But it was a surprise to me as we traveled up the southwest coast of Lougheed Island to find the water fresh in the shore lead, now of an average width of a hundred yards and more. Yet it is certainly no more surprising that this lead should be fresh than that leads far at sea should be fresh at the surface. Here we had in the shore lead the flavor of the land water, which was not always good. There was the chemical taste in some places, in others the little rivers had been running through peat beds, giving the water a brown color and peculiar flavor.

By September 8th we were at the northwest corner of Lougheed Island ready to cross to Borden Island but a reconnoitering excursion proved that the young ice covering the thaw on top of the old ice was not yet strong enough. The trouble was not so much that the frost at night had been insufficient but rather that there was a heavy blanket of soft snow. However, it froze exceptionally hard the night between the 8th and the 9th and the cold continued all day, so that we considered it safe.

Our sentiments on leaving Lougheed Island are shown by the diary on September 9th: "We left Lougheed Island at 4:20 P. M. today. It is a hospitable if not a very pretentious place. We have not been hungry nor uncomfortable and are taking away with us food to last two or three weeks and skins for bedding and for clothing. We traveled about due west four miles and camped at 6:35 P. M. to get our work done before dark so as not to have to use our tallow for light. Our good Burberry tent being dark of color and double, is a poor place to do anything in after sundown unless you burn a light (and this we can scarcely afford for we need all the tallow for food). The snow on the ice is much deeper than on the land and the sled frequently sinks to the toboggan bottom (so that we should have trouble without this useful device). The ice on the ponds is barely strong enough and creaks under the weight of the sled."

But as we traveled on in continued frosty weather the ice got daily stronger and became in the main safe although we always had to be cautious. I used to walk ahead carrying the ice spear to test every low place, and occasionally I slipped through. Soft snow and rough ice mean slow progress, so that it was not until September 14th that we sighted land. We reached Borden Island next day and found the ice on the shore lead weak. After looking about and picking a comparatively safe crossing, we tried to rush the sled over quickly, but it broke through just as we were getting it to land, and the load had a close call from the wet.

Before us now were rather trying conditions. A good survey of the coast was difficult for it snowed nearly every day. The black headlands that would have been conspicuous a week or two before were now white and indistinct against the leaden sky. Daylight, too, was rapidly waning and it was one of our main concerns to reach Cape Murray while yet there was enough light so that our party could be of some use in the fall hunt. For we were counting on finding Natkusiak's party waiting for us.

The men took the sled along the land, as usual, while I traveled overland looking for caribou and learning what I could of the country. I have known since I first began to travel in the North that this method of advance is not customary, but it is only since my return from this expedition that I have come to realize fully how severely a method which appeared to me logical and indeed the only sensible one has been condemned by many explorers. A typical example is from the diary of Lieutenant Sherard Osborn, written in April, 1853, on the north coast of Bathurst Island at a place that could be seen from our Lookout Hill of Lougheed Island.

"We had to-day a painful proof of the danger of people going away from their party in chase of game. Lieutenant May left us to follow along the upper slope of the adjacent land; the sudden increase of the gale shut us out from his view, and at the same time a fine herd of deer came in sight; he followed them, lost them, and saw another herd; still following, and trusting to securing his return by some recognized marks, it was not until he found himself tired, without a prospect of procuring any addition to the rations of his party, that he discovered his route to be a wrong one, and we became alarmed at his lengthened absence. The temperature continued to fall, and the gale abated nothing. The sledges encamped, and after pemmican Captain Richards and Mr. Herbert left with two light sledges to seek him, the weather gradually clearing up, and most happily so, for after a time they met Lieutenant May, who was much exhausted, and returned with him to the camp late in the evening. As many as thirty deer had been seen in all by Mr. May. Eight P. M. temperature minus five degrees." *

This adventure that seemed so serious to Lieutenant Osborn occurred on the 26th of April when there is no darkness even at midnight and when, as their record showed, the temperature very seldom went lower than five or ten degrees below zero even at night. A dozen other members of my party at different times have left the sledges along the coast and have hunted inland, perhaps as much as a thousand different times all together, and often towards

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* "Further Papers Relative to the Recent Arctic Expeditions in Search of Sir John Franklin," London, 1855, pp. 198-199.

midwinter when there is little daylight even at noon and the temperature falls to thirty or forty degrees below zero. And yet nothing serious has ever happened to any of us.

On the several hundreds of occasions on which I have courted what Osborn calls "the danger of people going from their party in chase of game" I have never failed to find camp at night although the men had sometimes traveled fifteen or twenty miles after I left them, and although I might have gone as much as fifteen or twenty miles inland. Of course we observe certain elementary precautions. The men have to camp in some place easily found, which means that they must not camp where there is any great difficulty in distinguishing the meeting place of the sea ice and the land, nor camp in towards the bottoms of deep bays. When I descend to the coast after the day's hunt I have a rough idea of whether the sledges are ahead or behind. I go to some promontory they must have passed and pick up the trail, or determine from its absence that they have not passed. On occasions of special perplexity the men may put a lantern outside if they have one; or if, as in our present case, no lantern is available, they will burn a candle within the camp so that the flame will show through. Of course in foggy weather and in blizzards the tent cannot be seen more than a few yards, but even then it can be found; and if it cannot be found (which never has happened to me), you merely have the tedium of passing a night in the open or in an unheated snowhouse which you have to build for yourself.

On the journey around the southeast corner of Borden Island I had many long hunts inland with very little result. Tracks of wolves seemed to me to be more numerous than tracks of caribou. Two diary entries of these excursions are typical, except that the difficulty of finding camp on the 18th was a little out of the ordinary. For some reason the men, for about the only time on the trip, had neglected to go in close to every prominent headland so as to give me a chance to pick up the trail. This was our invariable rule. If I found no trail at a conspicuous headland and if the conditions were such that a trail could have been seen, I assumed that the sleds were behind, and in every case except that of the 18th correctly. When a blizzard was blowing and a trail could not be seen, I had to rely on my judgment as to the direction to be taken. In such case I would be sure to descend to the coast near enough to the starting point of the day for the sleds to have gone farther and then I would go on and find them ahead. The diary entries follow:

"*September 16:* Started 8:30 A. M. and followed the coast about S x W twelve miles. Then saw caribou six miles to the SSW and went after them. When within half a mile of five I had first seen, I started three others out of a ravine where they had been hidden till they heard me. These were in long range but I did not fire so as not to scare the other five. I had fine cover but it was a clear, frosty day and they heard me at five hundred yards or over, and when I came out of the ravine they were a mile away. They ran WNW and did not stop for at least eight miles (as I could see through my field glasses). The other three caribou had run north. I did not follow either band as their trails led back or inland and killing them would delay us too much. Walked south after giving up these caribou and found the coast trending westerly. Went down to the coast and six or eight miles back along the shore to where I found the camp, which is eighteen miles from yesterday's camp. Vegetation sparse the first ten miles to-day, then abundant for five miles, then practically none down to the coast. Much sand and mud blown out on the ice (from the coast hills).

"*September 17:* Started 10:30 A. M. and followed the trail of the caribou seen yesterday, as the probable westward trend of the coast made it seem likely I might find them not so very far inland. The team followed the coast, Noice sketching it. Found the caribou trail averaged west in direction. I caught up to them in very thick fog at 2:30 P. M., shot one only as I thought it probable we should find it too far to fetch the meat. These caribou seem very nervous—they are probably much chased by wolves. A wolf came to within three hundred yards to get my wind and was going to run off when I shot him—a fine male in medium flesh and nearly uniform yellowish-white, weight doubtless over one hundred pounds.

"I carried fifty pounds of caribou meat and traveled south from 4:15 to 5:20, three and one-half miles through thick fog. The fog lifted then and I saw the coast to the SSW and WSW. Walked SW x W six miles to the beach. I then went out on the ice a quarter of a mile but saw no trail. As I expected the sled to travel close inshore, I concluded the team had not reached this point, so walked east five miles when I suddenly came down to a bight where I found the trail, which there for a few hundred yards was near the beach. This was at 9:30 P. M. Followed the trail west till 11 P. M. when it got too dark to see it (on account of the sky clouding up). Thereafter followed the coast and found a deep bight that it took me three and a half hours to walk around. Found the camp at 3 A. M., September 18th, after a steady walk with a fifty-pound pack of about ten and a half hours. Got a little footsore from sharp slivers of rock frozen at all angles into mud. These had (in a day) worn a hole in a nearly new bootsole that would have lasted a thousand miles on snow. Thick fog all day inland. It seemed to me that in following the caribou trail I climbed steadily for ten miles, probably nearly a thousand feet. The hills are rounded but there are frequent outcrops of limestone similar to the samples we took the other day, generally horizontally bedded. In many places, both on hilltops and in water courses, the limestone is cut into unstable columns—one that I found in a creek is fifteen feet high. Apparently there has, therefore, been no glacier here recently.

"The lowland along the south coast is mud and sand, barren of vegetation. Strong winds have blown much sand out on the sea ice and buried the snowbanks in sand, which may be another way of forming ground ice. The lowland (under one hundred feet) is about a mile wide along the coast near the camp of September 16-17 and about ten miles wide at the camp of September 17-18. It slopes gently to the sea with little detail of any kind. There are some table-topped hills to the northwest and north ten or fifteen miles inland. [In one place I had been walking across] land thickly covered with grass and moss [and came to] where it met absolutely barren land in a straight line as definitely as the edge of a plowed field. [This line of demarcation] shows up well now, for the snow is held in the vegetation and the barren ground is bare, so the boundary shows on a far hillside clearly. Another such line [forming the boundary between rich soil on one side and sterile on the other] runs at least a mile from the coast at our campsite of September 16-17 to the top of a hill three hundred feet high.

"My fine wolf specimen which I should have liked to take home will have to be abandoned. It is about seventeen miles, partly bare and stony ground, from here to it and that would be a long day for men and dogs and hard on the sled. Besides, I am getting anxious to reach Cape Murray to coöperate with the people there in putting up meat and fat for winter—if anybody is there. If no one is at Murray I am equally in a hurry to get to Melville Island to organize our work there with reference to the ice trip from Murray next year. No sign of Castel and the depot he was to make for us can be found anywhere. By my instructions he was to find a sea route, if any existed, between our land and Findlay Island and was in such case to follow the east coast of our land and make a cache of certain articles we need on the south shore of Borden Island. We have now traveled nearly the whole south coast—we appear to be south of the Leffingwell Crags, though I have not seen them as yet—and have found neither cache nor message. The only hope now is that he may have come through Wilkins Strait and made the cache on the southeast corner of that island. We can, of course, get along as we are, but a gallon of kerosene and some new boots would be a good thing to have. I fear this failure to find Castel's depot presages Natkusiak's absence from Cape Murray, as something must have gone wrong."

September 18th I did not get to bed till five in the morning and though time was precious, we decided to make this the occasion of another attempt to get a meridian altitude of the sun, for we had been able to get no observations since we landed on Borden Island. There had been one clear day but that day I was hunting inland. This day of September 18th promised well at first but it clouded over before noon and we got no observation. I quote the diary:

"Started 1:30 P. M. after failure to get meridian altitude and traveled northwest and then west about sixteen miles overland to the sea. Found the sled had not passed and walked back six miles to camp. Home at 11:30 P. M. They had traveled by reckoning fifteen and a half miles, camping at 7:15. Land crossed to-day chiefly barren but some grass. Hills generally slope south because of underlying limestone strata which are in escarpments in the Coronation Gulf fashion, with a five degree or eight degree slope south and precipices or steep sides to north and northwest. This form of the hills is doubtless determined in part by the greater heat of the sun in the afternoon. Took some specimens of the rocky outcrops—these are frequent in ravines and on hilltops when you get over five miles inland. Saw one old caribou track and the first ptarmigan track since the one flock we saw on Lougheed Island. Several lemming tracks and holes. Noice saw a snow bunting.

"*September 19:* Hunted overland while others followed the coast. They traveled twenty-one miles and I walked about twenty-five. No tracks of animals except lemmings. Country low and barren, mud the first half of the day but more vegetation and rolling ridges toward evening. Saw the Leffingwell Crags during the day. Fog in the evening but I take it our camp is a little south of Jenness Island.

*"September 20:* Started 9:50 A. M. and the team half an hour later. Our camp proved to have been about six miles south of Jenness Island. About three miles south of that island we found a big log (apparently driftwood). It was only five or eight feet above sea level but about two hundred yards inland. It was nearly my fathom half around it (circumference eleven or twelve feet). It seems to me this is the biggest log I ever saw in the Arctic and probably not the same sort of wood as comes down the Mackenzie River. The piece is about seventy-five feet long (from the roots to where it is broken at a diameter of eighteen inches) and lies entirely on top of the ground. It is so rotten you can break it by pulling on its roots, but so dry that I thought we could burn it. Propped up on end several pieces (I was able to break out of the log with my hands, to attract the attention of the men so they would pick it up for fuel, for this was the first piece of driftwood we had found all summer). The vegetation became more abundant to-day but changed from prevailingly grass to prevailingly moss and lichens. Saw several caribou tracks two or three days old near the drift log. I went five miles inland from there to get a view from a high hill two miles northwest from which I saw two cows and two calves which I shot.

"Skinned one cow and calf and hurried to the coast, for we had only fifteen pounds of food on hand and I had told the men to feed caribou skins to the dogs if I were not home by dark. These were valuable skins and I was anxious to get home with meat for the dogs' supper before the skins were fed to them. Took a northwest course and came to the coast about four miles north of Jenness Island. Saw no traces of sled tracks and concluded camp was farther south. Walked to Jenness Island and found sled had gone offshore there into the rough ice to get across a bight in the coast that is about six or seven miles across and a mile or so deep. I had not thought this a possible course for them to take, for there is beautiful level young ice everywhere along shore. Followed the sled trail and found it bad walking. Sled had also gone slowly and with difficulty, as the trail showed. Half across the bay they had realized their mistake and had cut inshore, reaching the level ice about two hundred yards north of where I had reached it coming from inland. All this delayed me two and a half hours and I got to camp half an hour after the dogs had eaten the caribou skins.

These were not first quality skins but I had been saving them for making trousers, for which purpose they would have done very well. These were three out of the four caribou skins secured in Amund Ringnes Island."

Various hunts over southern Borden Island confirmed the view formed the day after we discovered it in 1915 that it is or has in recent times been frequented by caribou in winter. This was shown by the abundance of horns of all ages and both sexes. The oldest bulls drop their horns about midwinter and the young cows not till June, but there were many horns of both of these and also of the intermediate kinds. That the comparative fewness of caribou now was due to persecution by wolves I inferred not only from the fact that wolf tracks seemed as numerous as those of caribou, but from the following considerations: Although vegetation in much of Borden Island is as abundant as it is in Lougheed Island, the caribou were exceptionally fat in Lougheed Island and extraordinarily lean in Borden Island. When I last saw caribou in Lougheed Island about September 5th, the cows had shed the velvet from their horns, but on September 20th cows of the same age killed in Borden Island still had the velvet intact. I have imagined that their leanness was caused by their being harassed by wolves and that the slow development of the horns was a consequence of the leanness. All this may be bad reasoning, but I give it for what it is worth.

For five days there is a blank in the diary, partly because of the mental depression which appears in an entry on the sixth day.

"*September 26:* This is an uncomfortable time while the snow is yet too soft for house-building and the temperature nevertheless too low for comfort in a tent. My ink is frozen and I had thought to make no entries except in my pocket notebook until I could write with ink again. But the time is getting too long. I shall make entries for September 21st to 25th later, however, as time presses.

"Castel's complete failure is now too unfortunately clear.*

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* This statement and one or two other sentences from the diary entry of September 26th are reproduced here not as facts but to show a state of mind at the time of writing. It will appear later that Castel had not failed in any sense for which he could be criticized, and that both he and every one else in Melville Island had worked hard and faithfully and been successful far beyond what might have been expected, considering their situation and resources.

In this book I am trying to present things not as they appear now but as they seemed then—with, of course, the exception of immutable facts, such as topography or temperature. It is in exploration as it is in life of

We have searched the whole south coast of Borden Island without finding the depot he was to make for us and have been to Cape Murray without getting a message from him or the hunting party that was to camp there. This is setback the first in the work of next year and a serious one, for we can now have no winter base at Cape Murray. Castel was to cache for us boots, ammunition and other equipment, and failing to find these we are not in a position to put up meat. Besides, if we stay here the same men who have failed us now would probably fail us again and spend the winter where they can be most comfortable and least useful and leave us unsupported, so our work up here would come to nothing anyway. The best we can now do is to go to Melville Island and help to prepare everything there for the spring work. Noice volunteered to stay at Cape Murray to protect any meat we might put up while the sun lasts."

I interrupt this quotation on finding it obscure in its reference to a very sportsmanlike offer made by Noice. He suggested that we might all stay near Cape Murray for as long as the daylight lasted, putting up meat; then when the darkness came on he would stay there alone to protect the meat while we went to Melville Island to arrange coöperation with our people there and to send a sled up to him in January. Here I am able to continue the quotation:

"I dare not accept this offer, for we may possibly find conditions so bad in Melville Island that it would be difficult to send a sled back to him. We are therefore all starting for Melville Island to-day. We started from a camp six miles north of Jenness Island and traveled southerly along the coast about seventeen miles. Fog on the land prevented hunting."

On the way south across the ice towards Melville Island we made tea for the first time in months. Travelers in polar regions and campers in the "Great North Woods," as the sportsmen's magazines have it, have said a great deal about the exhilarating effect of tea. Some of these writers call it the most desirable of luxuries while others consider it a necessity. On our ships in winter quarters and on sledge trips near a base camp most of the men, including myself, drink quantities of tea, but with the ex-

tamer environments, that the moods of yesterday are difficult to enter into to-day. My mind has now a very different picture of the expedition from what I find in my diaries. I have assumed that the reader would be interested in the feelings and outlook he might have shared had he been with us, rather than in direct facts as they appear now that time has settled uncertainties and reversed contemporary judgments.

ception of one or two Eskimos we have never had in our advance parties any men so fond of it that they did not soon conclude that making it was more bother than it was worth.

Fuel spent on heating tea is wasted when in boiling meat you have as an inevitable by-product a broth that is an excellent drink. If you put on the stove a potful of ice after the meat is boiled and turn it into water and the water into tea, the primus or whatever cooking device you have uses most of its heat for producing temperature changes in the ice and water and not in the room, and whatever heat escapes from the tea does so in the form of steam, which is a disagreeable method of heating. Our white men have been agreed that if the stove was to be burned after the meat had been cooked it was better to burn it without any pot above to absorb the heat, thus getting full warmth and dryness in tent or snowhouse. We have always taken a certain amount of tea on our trips, but from this our longest trip we brought back half of what we started with. Those who have always used tea will, of course, always remain convinced that no sensible camper or traveler would do without it, but we feel differently.

The journey south from Borden Island towards Melville Island was an anxious one. Our progress had been slow since leaving Lougheed Island and uncomfortable, for even now that the temperature had begun to drop well below zero we were still compelled to use the tent, having met with not a single snowdrift hard enough for house building. The hunt over Borden Island had given more knowledge of the country than game, for even when caribou cannot be seen through the snow or fog at three hundred yards, rocky outcrops are visible and the grass when you kick the snow away. We had started from Lougheed Island with several hundred pounds of dried meat and caribou fat. We finished the last of the dried meat on Borden Island near Jenness Island, and had now a little of the Lougheed Island fat and about half the meat of the four caribou killed near Jenness Island.

Then we were all depressed through not finding Castel's expected depot or Natkusiak's party at Cape Murray. These things had their worst effect in inclining us to think that all sorts of mishaps and miscarriages had occurred and that not only were prospects for next spring considerably darkened but the situation might be bad in Melville Island. We even talked of the possibility of finding nobody there, although it was difficult to assign any reason for thinking so remarkable a thing could happen.

In these high latitudes darkness comes on with giant strides when once the equinox is passed. It appears to come even faster than the rapid retreat of the sun justifies, for this and the early summer are the seasons of the heaviest precipitation. The total precipitation in the part of the Arctic where we were now would probably amount to less than eight inches of water in a year, or less than that of any part of the temperate or torrid zones that is not a desert. But it comes in the form of fog, fine mist and snow and manages to fill the air continuously for days and even weeks. We touched on the way at Emerald Isle, which is as thickly covered with vegetation as the name given it by McClintock implies, and I hunted overland while the sledge followed the east coast, but no game could be seen through the continual snowstorm. In following the beach the men strangely happened on a seal—strangely because seals, though they live in the water and should not mind getting wet, do not usually expose themselves either to rain or snow. Charlie tried shooting at eighty yards and missed, which was unusual for him. He said it was due to the excitement of realizing how much depended on the shot, for we were out of food and fuel and he knew that my chances of getting game in the interior of the island were small on account of the storm.

As the days got shorter and darker the snow on the ice became deeper and softer and progress slower and more slow. We made as little as seven miles and a half in a long day of work that was hard not only for the dogs but for the men who pulled on the sled to help them. The load was heavy, six feet high with Lougheed Island caribou skins, for we thought it possible that the summer hunt in Melville Island, though we did not conceive that it could have failed of ovibos, might easily have failed in caribou killed at the right season for clothing. For their bulk the skins were not heavy, but neither is hay and it is possible to have a big load of either. On a sled no more than twenty-six inches wide a load five or six feet high is topheavy and inclined to upset.

After taking seven days for the crossing instead of three we came in sight of Melville Island near Cleverly Point the afternoon of October 2nd. We saw it only for a few minutes through a temporary cessation of snowfall but long enough to choose a place for the camp. The sleds would head that way but I took a course somewhat more to the right so as to hunt over the corner of land well back of the cape. It cleared after sundown and I could see a band of eight ovibos about eight miles southwest of our prospective camp. They were too far away to reach before dark and I did not worry about finding them to-morrow, for a farmer's cow is as likely to break through a stone fence and get lost as a band of ovibos to travel beyond reach during a single night.

My recollection is that we had finished our lean meat a day or two before and had been eating remnants of caribou fat brought from Lougheed Island. The diary merely records that for the last two or three days the dogs had eaten forty of their sealskin boots, some new and others in which they had worn holes on the needle ice in the summer. They had also eaten several pairs of our worn-out sealskin water boots. We had been taking them home for new soles but now sacrificed the uppers rather than let the dogs get too thin.

We have so often come to our last meal in the uncertain lands where ovibos are absent that an empty larder did not worry us in Melville Island, especially with a herd in sight. I don't think it would have worried us much if I had not seen the herd, for even in a snowstorm an ovibos can be seen three or four times as far as a caribou and when seen never escapes. A caribou track may lead you on for tens of miles, while polar cattle do not move ordinarily more than a few hundred yards in a week and any trail, no matter how old, will soon lead to the herd.

On my way home in the evening I had seen a bay that ran into the land not far from where the cattle were grazing. The next morning the men moved camp to that bay and came inland with a light sledge for fetching the meat, while I went ahead and killed a bull and an old cow. I saw a second band (fourteen) but did not bother them.

A little later will be given a full description of the habits of ovibos and our methods of killing them, but now that I have thought of it I cannot resist saying that the word "sport" has a curious meaning when applied to killing them. I have heard of long journeys being made and even of ships being outfitted for the purpose of "hunting" ovibos. There may be much to say for the pleasures and even the adventures of the journey itself, but as for the "hunting" I would suggest that equally good "sport" could be secured with far less trouble and expense by paying some farmer for the permission of going into his pasture and killing his cows. I can conceive of accidents happening in ovibos killing and I have read stories, of the truth of which I have not the slightest doubt, showing that when conditions are just right, or rather just wrong, dogs and even men may be in some danger from them. Sverdrup tells of a team of dogs that dragged the sled to which they were attached into the center of a herd and how the dogs and some of the men were uncomfortably situated as a consequence. But I know from experience in both places, and so must every one else who shares it, that cowboys on the large ranges of twenty and thirty years ago were frequently in more danger from half-wild "domestic" cattle than any of our party have ever been from ovibos.

The day after killing the bull and cow we remained in camp to rest the dogs and repair our snowshoes. The going was passable along the coast but for hunting parallel to the sled's course inland it was difficult to keep up unless you had snowshoes, for you sank to the knee at every step.

I have explained elsewhere how caribou meat is never tough because caribou never get old. Just as the domestic calf can run faster than the cow, so can fawns, and the yearlings run faster than the older animals, and year by year their speed lessens. It is always the old animals that lag behind when the band is fleeing from wolves, and probably where wolves are numerous few caribou live to be more than from five to seven years old. But it is otherwise with ovibos, except as newborn calves or single stragglers from the herd. The older they are the more powerful and the more difficult to wound through the thickness of hide and hair and wool. Their safety from wolves increases as they get older up to the point of actual decrepitude when they lose their instinct of following the herd and allow themselves to be surrounded and killed. It follows that big animals such as the ones I had killed are tough. The bull was in beautiful condition, giving fifty or sixty pounds of clear fat from the outside of his carcass, chiefly from the neck and back, and ten or fifteen pounds of intestinal and kidney fat. The cow was in good condition although less fat, and the meat of both was excellent in flavor.

Before we landed on Lougheed Island we had been saving about three-quarters of a gallon of kerosene, doing our cooking mainly with caribou fat up to the point of finding the huge drift log on Borden Island. This had been thoroughly rotten except some of the roots, but they had given fuel to take us nearly to Melville Island. Then for a few days we had cooked with kerosene but now we turned to ovibos fat to save a quart of kerosene that still remained. We thought we might want it badly to burn for light in a lantern in case the *Bear* had not reached Melville Island. As an indoors light tallow and seal oil will do very well, but for signal purposes on a dark night we could not with our limited resources devise any means equal to a kerosene lantern.

It was wonderful luck that on the evening of landing in Melville Island we had enough clear weather to see the ovibos herd and the next morning enough to kill them, although after noting the topography in the evening I might have been able to find them even in a storm. But just afterward the weather became so thick that, although the men with the team were only a mile away and in full sight coming towards me, they got lost and half an hour later in a clear spell I saw them a mile to one side. I was just able to signal to them before the weather thickened again and by going to meet them and shouting was able to guide them to the kill. It was impenetrably thick the rest of the day and the day following, so that we talked a good deal about having secured the meat in the nick of time.

While Charlie was mending snowshoes, October 4th [1916], I made a long diary entry of which the following is a part:

"Plans and worries are mixed badly in our minds just now. Really we can have no plans till we learn just what has gone wrong and how badly with the *Bear* and in Melville Island. We make new guesses each day of what will be wrong but they are influenced by how we feel and vary so much in tone that they are not worth writing down. They range from assuming complete disaster due to natural causes, to complete inactivity due to human frailty. A thing suggested by Noice I sincerely hope may not be so—that Castel's party may have had sickness soon after leaving us and may be still in Isachsen Land. If that be so, we shall learn it in Melville Island so late it will be difficult to reach them in Isachsen Land till the sun comes back. If Natkusiak is the sick one or if both the others are sick, it might mean disaster. We should, of course, try to reach them but the difficulty would be to find them in the dark even after getting up to Isachsen Land."

## CHAPTER LIV

### WE DISCOVER PEOPLE AND A COAL MINE

ON the 5th we started traveling southeast, the team following the coast and I hunting overland. Because of the toughness of the ovibos meat which we could well use for dog feed if we had something else, I shot three out of four caribou found about a mile from the beach, the team coming right up to the spot with the load and taking on the meat without the special trip inland.

This day I saw again the ovibos herd which I had counted at fourteen two days before. They were now more scattered and I made out seventeen with a possibility of more. It is nearly always so in estimating herds at a distance. You put the number too low, and the lower the less your experience. You may estimate too high the caribou in a given area, such as Banks Island or in Canada north of the treeline, but I have never known any one who did not have a tendency to underestimate a herd actually in sight.

On October 7th, "I left camp about ten A. M. and the others a half hour later. I hunted towards the Raglan Range . . . but failed to see any game and came down to the coast some five or six miles south of Cape Grassy at half-dark. Found a sled trail badly snowed up by a wind that blew for an hour about noon. Started following this south (assuming it was our sled trail) but soon noted that the footprints, although badly snowed over, showed by the turning out of the toes that the man was walking north. My suspicions once aroused, I soon verified this by a dog track on a hard snowdrift also going north. This was then not our trail. I next took it to be that of two men traveling light to look for us in Borden Island. Followed trail and found it turned west around Grassy, keeping near the land. Soon I saw a light, which proved that a camp other than ours was ahead, for we have been saving fat and have used no light as yet and a light would not show so clearly through our dark tent, anyway. When I got nearer a man came running to meet me. It was Natkusiak, apparently quite as glad to see me as I was him, which is saying much."

I should like to quote further (were it not too lengthy) my entry for that day for it shows better than I can now how overjoyed we were to get in touch with people and what a surprise it was to find them this far north. Having once ascertained that they were not at Cape Murray, we had not been expecting to find them this side of Liddon Gulf; most likely, we thought, they would be all gathered in the vicinity of the *Bear* which would be at Winter Harbor southeast from Liddon Gulf.

The best news to reach me was the fire which was blazing in an open fireplace when I entered the comfortable ovibos-skin camp. They had discovered an excellent coal mine half a mile from the camp, good lignite, in inexhaustible quantity from our point of view, at least. "This is better than a gold mine," says the diary. "Had I a wishing-cap I could not have wished for things more valuable to the expedition than coal on northwestern Melville Island convenient for our spring work."

We got much news and in the main it was good. There was a report from Castel which Natkusiak supplemented. When they left us at Cape Isachsen they had made a course for the northwest corner of King Christian Island, but that northwest corner existed upon the map only and they found none of it. This puzzled Castel greatly, but the weather was thick and he thought he might have missed it. Turning west now towards where they thought our Borden Island lay, the party sighted land out of the fog which they took to be King Christian Island, either misplaced on the map or more extensive than there indicated. But it was really the north end of Lougheed Island and Castel was therefore its first discoverer. I should have given his name to the north cape of it had I not already placed that name on the fine bay which he discovered just west of Mercy Bay on Banks Island. If he had realized that the land was new he would have left our depot upon it, knowing that we should see it also and explore it, but as he took it to be King Christian Island he merely built a small cairn and left a message. This must have been on a little strip of coast that we never visited. He left this land after skirting the coast a few miles and after Natkusiak had killed some caribou, and expected to strike the southeast corner of our Borden Island, optimistically estimating that it would reach far enough east to intercept his direct course for Cape Richards. It did not clear till he got to that vicinity, but when it did he was unable to see Markham Island, which should have been as plain as Hamilton Island, found lying in its appointed place. As land is at this season black and conspicuous against the white ice, it seems fairly certain that Markham Island does not exist. Lieutenant Hamilton who reported it must have mistaken some dirty ice for land, a thing very easy to do.

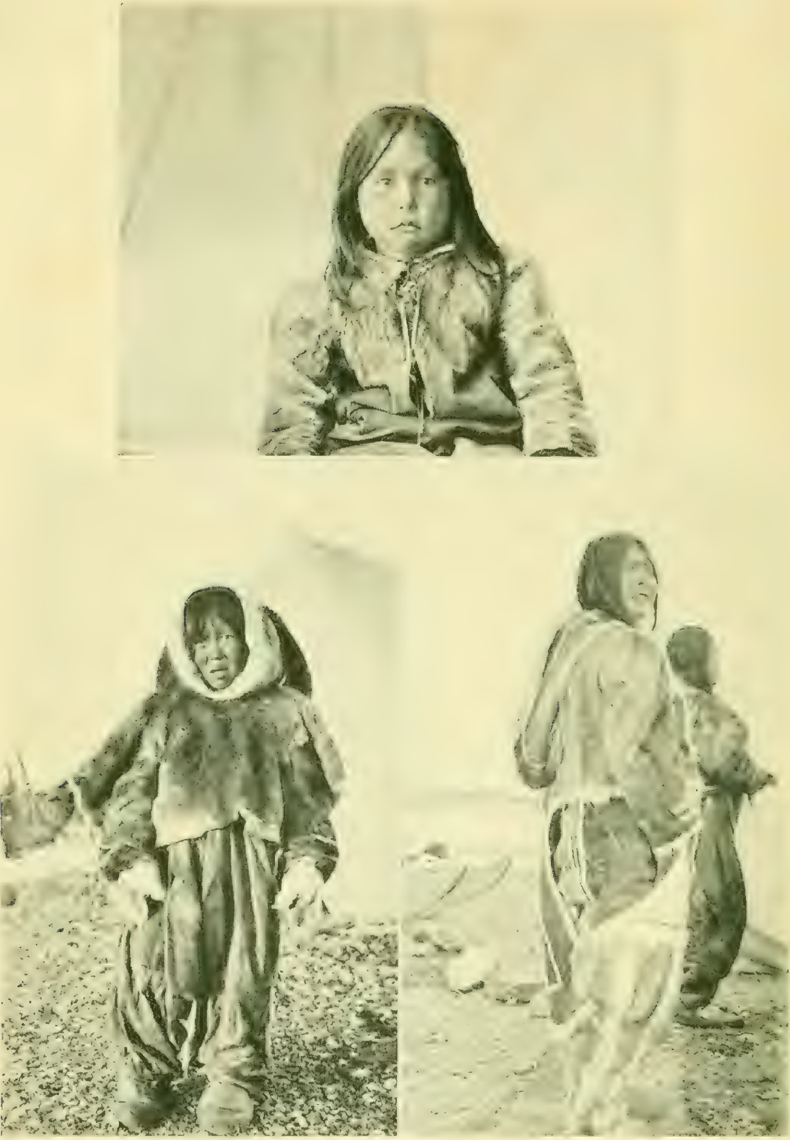
With Borden Island nowhere in sight, Castel concluded it would delay Natkusiak's Cape Murray plans too much to turn back and make the depot upon it, and he proceeded through Hecla Bay to Cape Fisher where he made a temporary depot, telling Natkusiak to pick up the things for us later on his way north. They then hurried south across Melville Island to Storkerson's camp. They had expected to find it near the head of Liddon Gulf but had to look for it forty or fifty miles farther, for it was, in fact, near Cape Ross.

Storkerson lost no time in outfitting Natkusiak's party and they started at once for Cape Murray. But it was June and traveling conditions had become bad. The fifteen miles across the isthmus between Liddon Gulf and Hecla Bay were especially hard, for the ground was bare and the load had to be divided and relayed. In Hecla Bay the ice was even worse, but things did not go badly till they got to Cape Fisher and picked up our depot. They also took on too much ovibos meat, making the common mistake of forgetting that "the Lord will provide." From Natkusiak's account they must have had from twelve to fifteen hundred pounds on one sled. When it is remembered that Peary, Sverdrup and northern explorers in general have considered six hundred pounds to be a big load, it is not strange that even our good sleds should be unequal to such a burden, and this was not one of the best. In crossing a water channel on the ice of Macormick Inlet it plunged off one bank to be jammed into the opposite one, and was broken beyond repair. There was nothing to do but spend the summer in the vicinity, which they had done.

During the summer they killed over fifty ovibos, ten caribou and a few seals, and had accumulated some dried meat. Meantime they had been gradually working their way northward until they discovered a coal mine about five miles west of the tip of Cape Grassy and perhaps half a mile inland. It is a seam tilted on edge and outcrops in various places, but most conveniently for surface mining at the top of a hill on the bank of a small ravine. Besides coal it furnished a sort of pitch that on being lit with a match burned with a flame like that of sealing wax, with a very black smoke and an odor resembling that of asphalt. They were using this for kindling and also as chewing-gum.

MAKING USE OF ICE FOOT OF SMALL LAKE. MAN HAS STRIPPED AND DOG LIES IN ICE WATER ON ACCOUNT OF HEAT.

"THE GROUND WAS BARE AND THE LOAD HAD TO BE RELAYED." SLEDGING IN SUMMER.



Copper Eskimo Girls and Women.

It seems that Eskimos have always used chewing-gum. They got it from spruce trees or made it of seal blood in primitive times, and now take to the commercial variety of it more readily than to any other imported commodity. They no longer relish gum made of seal's blood and considered it a hardship that, although I had outfitted them with some commercial chewing gum when they left the *Star*, they had long ago run out. It sounds more like a joke than it really is to say that contentment with their situation in Melville Island was materially increased when they discovered this gum by-product of their coal mine.

The Eskimos had made a brave attempt to repair the sled and Eskimos are ingenious at such things beyond belief. But even so it was rickety. Nevertheless, the party had intended to start for Cape Murray in about a week. It would have been pleasant to find them there but it was easy to decide, sitting before the cheerful fire, that it was better now to have them spend the winter here and to make Cape Grassy the outfitting base for the coming spring.

A report from Storkerson gave details of his last spring's work. He had been to the *Bear* to get his family, and had found every one there in good spirits and Captain Gonzales and his officers determined to bring the ship to us in the summer if they could. There had not been time for a trip to the northeast corner of Victoria Island to complete the survey begun the preceding fall and that work still lay ahead. As to Castel and Emiu, he had thought it best to send them to the *Bear* unless they specifically asked to stay in Melville Island, for he did not want to be troubled with men who were discontented for whatever reason. But both had asked to stay, volunteering to refrain from all complaints about the food and do their best to help. The last part of the promise, as Storkerson realized, was superfluous. They were excellent men except for their inconvenient views as to a meat diet.

A letter from Gonzales confirmed what Storkerson said about his intention to bring the ship to Melville Island. It was of a cheerful tone but contained no other important message.

There was a report from Wilkins. It had been our understanding when we separated that if things looked well on the *Bear* he would be free to proceed to Bernard Harbor and go out with the *Alaska*. He now reported not only that he felt sure the *Bear* would do her best to come to Melville Island, but also that personal news from Australia made him especially anxious to get south. He had been able to get still and moving photographs of the Prince Albert Sound Eskimos who in the spring had been encamped in Prince of

Wales Straits. From other sources I learned that many of them had later visited the *Bear* and that everything in regard to them was going amicably.

An expected piece of news was that a murder charge had been laid against me by the Eskimos of Prince Albert Sound. Kullak's wife, Neriyok, who according to her husband was expected to have a child before the middle of August, 1915, had had the child in January, 1916. A few weeks after that she had died, probably, as I interpret it, from the bursting of an internal tumor. But the Eskimos on the basis of their belief that having her live or die was optional with me, looked upon me as having murdered her. I had a letter from Palaiyak written in Eskimo assuring me that he had tried to explain to the people that I was not guilty and did not have the power of curing the woman even though I would. I took this letter with a grain of salt for, while Palaiyak was friendly enough to me, I know that his beliefs in magic and in the magical powers of white men, including myself, are such that he probably at least half agreed with the local people.

For Wilkins to go down to Prince Albert Sound to photograph a community of which Kullak was a member and where there were many relatives of the dead Neriyok was a brave thing to do. He never lacked courage in my observation nor did he later in the war, as his decorations show, but I do not think he realized how close to the wind he was sailing on this occasion. Among primitive Eskimos blood revenge is not optional and does not depend on anger but is a duty as sacred as paying a dead man's debts is said to be among the Chinese.

This particular group of Eskimos, however, apparently had the idea, of which I had never heard before, that property payment might take the place of ordinary repayment of life for life. Kullak, through Palaiyak and Mrs. Seymour, as they have both told me since, advanced the proposal that he would kill neither Wilkins nor any member of our party, not even me, if he were presented with a rifle with a considerable amount of ammunition. I had constantly refused to give a rifle to the Eskimos for reasons in their interest. The sooner they get rifles the sooner they will begin to kill ten caribou where they now kill one, with surfeit of food and skins where they now have merely enough, thus leading to the extermination of these animals or to driving them out of the district. The resulting hardship to the Eskimos ten or fifteen years from now would be far greater than if they should continue hunting with bows and arrows in moderation. Wilkins knew my feeling and refused the rifle.

Now comes the part of the story where accounts differ. Probably Palaiyak and Mrs. Seymour did not interpret accurately to Wilkins fearing that if Kullak's threats were exactly translated Wilkins might take a stubborn attitude which would result in an attempt to kill either him or some member of his party. After a struggle Kullak succeeded in taking a rifle away from Palaiyak. Later through the intervention of other members of the tribe Wilkins was paid for the rifle with a dog, but it was at best a forced sale. Palaiyak subsequently told me that Kullak had withdrawn his promise not to kill any relative of mine or member of my party upon being compelled to give a dog for the rifle, but he also said that nearly all the other members of the tribe had promised to see to it that Kullak would do no harm and had told Kullak impressively that if he tried to kill any one in our party they would forthwith kill him.

We spent October 8th in talking and rejoicing, while the women set our clothing in order. It was especially our boots that needed fixing although they had held out wonderfully. There are few man-made articles more nearly perfect as to comfort and durability than the footgear of the Eskimos. The only thing to temper our rejoicing was that Charlie began to feel severe pain in one of his fingers, indicating the development of a felon. The following day we left the camp, and one week later met Storkerson, Castel, Lopez and Emiu with two sledges on the east side of Liddon Gulf north of Cape Hoppner. We should have traveled faster but for Charlie's suffering. He could not ride, for the jolting of the sled was more than he could bear, and had to walk slowly and step carefully so as not to jar his hand.

There were so many things to learn from Storkerson that we camped immediately on meeting and began to review the summer. He had done his work well and had been adequately assisted by every member of his party. They had killed and converted into dried meat ninety ovibos, twenty-seven seals and two or three polar bears, and this meant a great deal of hard work. It is a big task, to begin with, to remove all the suitable meat from the skeleton and then slice it thin and spread it out on stones to dry. The meat would have dried much more rapidly hanging up, but there was nothing in Melville Island with which it could be kept off the ground except a few caribou antlers. Fogs and rains had been frequent and it had to be gathered in and covered with skins and then spread out when the sun came back. Wolves and foxes and bears were numerous, so that it had to be protected as well as dried, and nothing will adequately protect meat from bears except a man on guard.

It was probably unfortunate that they began hunting in the spring near Cape Ross, for the country there is very rocky and it would have been more desirable for us to have a base farther north. But having once started they had to continue in the same locality, for the stores of meat could not easily be moved. For convenience they had killed entire herds, ranging usually from ten to thirty head. The killing of two or three bands soon accumulated so much meat near Cape Ross that moving much farther into the gulf was out of the question. Still they did move a little way, to Peddie Point where they had discovered a coal mine. It was not nearly so good as Natkusiak's at Cape Grassy for it was bituminous shale rather than coal. It burned well enough but when the fire went out there were left in the stove pieces of the shape and size of those put into it. All that had burned was the oil.

When autumn came they had built a house of ovibos hides, with a main floor space of twelve by twenty-eight feet and an additional sleeping alcove about eight feet by eight. Out of tin cans they had made a stove and stovepipe and were very comfortable. It had been our intention to spend the winter in snowhouses lined with skins where we would have used seal blubber or ovibos tallow for fuel. Now that we had the coal to burn, the tallow would be used for candles, and the seal oil for food for men and dogs.

There had been no sign of the *Bear*, but from the high land at Cape Ross they had seen the ocean to the south fairly open and believed the ship could have had no trouble in getting to Melville Island. Even Liddon Gulf had opened up this year. This was different from last year, as was evidenced by the ice we had traveled over the preceding spring. Every one in Storkerson's party felt certain that the *Bear* must be at Winter Harbor and this was the reason for the present journey. He said that in spite of their promise Castel and Emiu had begun to talk so much about the meat diet and had been so sure that they could get to the *Bear* by merely going to Winter Harbor, that he had eventually yielded and was now taking them there. But for this pressure, he would have hauled to the main camp three or four depots of meat which had not yet been brought in. There was much dried meat at Cape Ross and a good deal half-way between there and the camp, and the fresh meat of about sixty caribou inland. The caribou meat seemed fairly safe from bears because of not being close to the coast, but the dried meat on the coast was in obvious danger.

I talked with Emiu and Castel about their wish to go to the *Bear* and found that while Castel's desire was unchanged, Emiu now said he would prefer to spend the winter with us in Liddon Gulf, for I told him that even if the *Bear* were at Winter Harbor I should not spend much time there. Emiu said that if he might be allowed to bring back some sardines and canned salmon from the *Bear* and possibly some sugar for tea, he would really prefer to spend the winter in a hunting camp. He said that when he left me at Isachsen in the spring he had been longing very intensely for "good grub" but that he was now all over it except that he hankered for tinned sardines.

We have said that Emiu enjoyed nothing so much as dashing around at top speed with a big team of fast dogs and an empty sled in the fashion of the dog racers around Nome, and that a big part of his usefulness was in carrying messages from one party to another. In Alaska where you can buy dog feed at road houses and where business men have to travel fast because of the value of time, speed driving is useful, but where the ice is as rough as in most places in the far North you cannot drive fast with a loaded sled without breaking it, which merely follows from the law that the shock of impact of a moving body varies with the square of the velocity. If you double the speed you fourfold the strain upon a loaded sled in rough going, and if you fourfold the speed you multiply the strain sixteen times. This together with the difficulty in securing dog feed for large teams makes it plain that the only thing light enough to be profitably transferred in the North by a fast dog team is information. If Emiu wanted to stay at the ship that usefulness would disappear. He had been a cabin boy on the *Bear* when I purchased her and his chief occupation dish-washing. If he went back to the ship he would have to take his old job. When I asked him whether he would prefer to eat good grub off plates which he would have to wash or to drive dogs and eat meat without dishes, his choice was made and he decided to stay by his dog team and live in the camps.

I now decided that Storkerson, proceeding to Winter Harbor with one of his two teams, should be accompanied by Castel, whom he would leave at the *Bear,* and Emiu, whom he would bring back. It had been his intention if he did not find the *Bear* to continue a day or two beyond to Dealy Island and investigate the depot left by Kellett and McClintock in 1853. Partly he had desired to find the groceries that would make some of his men more contented, but partly he wanted to ascertain what iron or other material for repairing sledges he might find in this depot. So far as food was concerned he and I agreed that hauling it from Dealy Island to Liddon Gulf would be a nuisance, but iron and hard wood were undeniably needed, for all but our very best sledges wanted repairing. I authorized him therefore to go on to Dealy Island if the *Bear* were not found. He carried a letter of instructions to Captain Gonzales to arrange for coöperation between our hunting parties and the ship's crew.

Lopez and the other team I would take with me to the base camp and set them to work hauling home the meat lest it be stolen by bears, if it were not already gone. We arrived at Storkerson's base camp October 16th, which we found very homelike under the management of Mrs. Storkerson and Mrs. Lopez. During the summer they had done their full share in helping to dry meat and now they were busy making warm winter clothing and waterproof summer boots without which our work would be difficult and comfort impossible.

# CHAPTER LV

## WE FIND BERNIER'S DEPOT

WE had long since lost track of the week days, but the newly Christianized Eskimos keep careful watch on Sundays, most of them for purely religious reasons but a few for reasons which make the forty-four-hour week a burning economic and political question farther south. They told me now that October 17th was Sunday, and so we kept it as a day of rest and rejoicing and a sort of celebration. A good part of many a celebration is brag and vainglory and we occupied the day in congratulating ourselves on our fortunate winter bases, the success and thoroughness of Storkerson's summer work, and the new triumph of our method of "living off the country," which had enabled us to complete a journey of two hundred and twelve days as measured from Natkusiak's hunting camp at Cape Alfred, left March 10th, to our arrival at his hunting camp at Cape Grassy, reached October 7th. The trip can be made to look a little longer if we figure it from our ship base at the *North Star* from March 2nd to the return to Storkerson's camp and cessation of travel October 16, 1916, two hundred and twenty-nine days or seven months and nineteen days.

We had not missed a meal nor had our dogs though there were three or four occasions when they had to sup on old boots or skins. Still I remember distinctly that whenever I saw them eat on these occasions they ate with a relish, and the few pounds of fat they had lost crossing from Borden Island to Melville Island they had picked up since we killed the first ovibos and were now as fat as ever. Of the eight we had when we separated from Castel, seven had arrived home safe and we had lost only poor Jack. There had been discomfort at times, especially in the early summer before we landed on Lougheed Island, and in late September and early October when our clothes were difficult to keep dry because of the hoar frost in the tent, which we had to use as the snow had not hardened enough for house-building. But we all three agreed that we would not mind starting out to-morrow for a similar trip, if to-morrow had been after New Year's with increasing light instead of at the beginning of darkness as now.

It seems that schools are much the same in Seattle or in Copenhagen, and Charlie and Noice laughed now at what they had learned in geographies and read in "adventure stories" about the "barren," "silent," and "frozen" north, which they had found so hospitable and friendly. I wonder if it pays to keep up the bogey of the polar regions, as we do Santa Claus? I have been uncomfortably cold in the North but I have been more uncomfortably hot in the South. I have even been more uncomfortably hot in the North than uncomfortably cold—during my summer on the arctic circle near the Coppermine River in 1910, when we had day after day that ranged from above ninety in the afternoon to above seventy during the night that was no night because the sun still beat down upon us. People do freeze to death in the North but always through some accident or carelessness; people do die of sunstroke in the South, which could presumably be prevented. But germs spread by heat are more menacing and we have no means of excluding heat from our houses comparable with our method of excluding cold and generating artificial warmth. And especially is there no portable invention for keeping one comfortably cool as clothes keep one warm in the North if rightly made, no matter what the temperature. At this winter camp of Storkerson's I used to warm the mercury before going out to take a star observation at night. It usually froze before the observation was over, which did not entirely prevent results for if properly placed the mercury freezes level. But no matter how solid it froze I lay beside it comfortably warm in my furs, even when I had to wait half an hour for the star to arrive at the point where the sextant was set. I had trouble in keeping the lenses from clouding with my breath, which was only a nuisance.

How helpful it was to have worked out a new and comfortable attitude towards the North can be seen better the more you read of the difficulties encountered by those who assumed it to be hostile. Sverdrup came out of his four years on the Nansen expeditions thinking the polar regions by nature hostile to comfort, but he got nearly over the idea during the four years he spent on Ellesmere Island, though never completely enough to make his work easy. He really knew how rich the North was in vegetation and in animal life, and no book gives more convincing evidence of this than the two volumes of his "New Land." Yet he does not appear to have trusted his own deductions, for he always carried huge quantities of food and never extended his journey beyond the limit for which these sufficed, except that the trips were lengthened through the better health and spirits of men and dogs brought about by the fresh meat. His longest trip, that from winter quarters in 1900 on the south shore of Jones Sound to latitude 81 on the west side of Axel Heiberg Island, was, according to his own summary, lengthened out by only thirteen days through the use of game.

It does not seem reasonable to me, but I have heard it objected to my method that it is too destructive of the game in the country traversed. You might almost as well complain if fishermen were to choose to live on their voyages entirely on fish. When tens of thousands of seals are killed annually for their skins and thousands of walrus for their ivory, it might not seem unreasonable to allow a polar expedition to kill just enough seals or caribou or ovibos to support life in the exploration of lands the very existence of which was unknown before. Moreover, our method is economical of game because we use few dogs. On his longest journey Sverdrup had over twenty dogs in his advance party where we had seven, and although he does not say how many were used altogether, he appears to have had two or three times that many, with the result that it was necessary to kill as many animals to lengthen his journeys by fifteen or twenty per cent. as to lengthen our journeys by several hundred per cent. Our supply bases were in Banks and Victoria Islands and, from that point of view, we were still on a journey not finished though we had made camp for the winter. The total length of the journey from supply base to supply base proved to be more than a year and five months, where four months would have been its maximum length had we depended solely on provisions hauled along.

There are also people who resent the noble sport of polar exploration being made too easy. It is as if one were to catch salmon with some unlawfully simple tackle. But I have never been able to see why exploration should be primarily a sport, or any sound reason for retaining artificial difficulties just so as to leave one part of the world where the imagination may, unhandicapped by facts, suggest heroic stories and movie plays. In the past we have scared people away from it and kept secret the knowledge of its friendliness to whoever has been willing to adapt himself to it, making it the exclusive property of the few. If we insist on the North remaining unknown, it will be necessary to make it an international reserve, a northern Thibet, a Forbidden Land by universal agreement and prevent any one from going there, or at least from staying so long that he learns to like it.

Even without recourse to Malthusian theories, whoever will look can see from the statistics of the last hundred years that unless the growth of population is checked through war or pestilence or birth control it will not be long till we need the North for those to live in it who like it, and for the production of that sort of food for the world's consumption to which its natural conditions are adapted. To take but one item: The tens of thousands of wolves that live on caribou do not kill merely enough for themselves to eat; they leave each carcass after a single gorging to be picked clean by wolverines and foxes, ravens and gulls. With the constant tendency in the tropical and temperate zones to convert cattle and sheep ranges into cereal farms and orchards, it will not be long, if we desire to continue our habit of living in part on meat, before it will be a real world necessity that the vegetation of the North shall be converted into meat that shall be used for food in the centers of population and not for the exclusive delectation of wolves, wolverines, foxes and ravens.

We talked much of such things as these, not only on our first day at Storkerson's camp but in its comfort and abundance during the whole winter. And we conceived there plans for conservation of the food resources of the North which have since been laid before the Canadian Government and which are sure to be carried out because the logic of conditions and events will be irresistible. In the geographic books of seventy-five years ago and less, the Great American Desert covered a large part of the western United States. There are only little desert spots left now, and these are getting smaller under the advance of knowledge and skill in irrigation, dry farming and the like. The "Frozen North" is now large upon our maps, but during the next fifty years most of it will go the way of the Great American Desert, by the same removal of ignorance from men's minds. The more stubborn areas will continue to shrink slowly before an advancing technique of food production and home-building just as the small desert parts of the United States are now shrinking before irrigation and dry farming.

If any men deserved rest Charlie and Noice did now, not because they were tired, for none of us were that, but because they had been looking forward to a leisure time when they could read a few books and write a bit and in a general way take it easy. This was now impossible. Charlie stayed indoors but only because of his painful finger, while Noice and Lopez had to start next day hauling in the dried meat. At the nearest depot, about eight miles southwest, they found a polar bear in residence. He had evidently been there for at least a week and Lopez estimated that he had eaten the dried meat of seventeen out of twenty-seven seals. Evidently in common with the rest of us he preferred the food he was used to, for he had not touched the ovibos meat. They killed the bear but his carcass was small pay for our loss. We wanted the dried meat for sledge provisions during the dark and half-dark part of the winter and early spring, whereas fresh meat as good as his was easy enough to get. However, there still remained about twenty-four hundred pounds of dried meat which was safely home in two days.

We now felt certain that the dried meat depot at Cape Ross would be gone, for bears are more likely to touch at a headland than to come into a bay as this one had done. But the Cape Ross depot was high on a cliff while the nearer one had been on the beach, and either this or luck preserved it for us, for it was found all safe, about twelve hundred pounds.

We now had another illustration of the food prejudices of men and dogs and, in this case, of wolves, which are after all but a sort of dog. Although the dried meat had been hauled home from the near depot, the meat of the bear had been left temporarily as of less consequence than the dried meat, and several days passed befor the men could go to fetch it. They found that a number of wolves—perhaps six, for we saw a band of that size about that time—had been around the depot during the nights and had dug up and gnawed to pieces meatless bones of ovibos and had eaten scraps of dry hide. But they had not touched the bear, either the meat or the fat. That these wolves could not under ordinary circumstances kill ovibos was shown by the fact that a medium-sized herd was grazing in the vicinity and tracks showed that the wolves had both seen and smelt the herd without making any attempt upon it. Still, through the occasional killing of a stray calf or a sickly old animal they were familiar with ovibos meat and devoured what had the familiar taste and smell. Moreover, all rotten meat smells much alike, and doubtless these bones had a putrid smell, one familiar to the wolves and relished. It is probable they cannot kill a bear and that they never try. Bear meat therefore was new in their experience and they turned up their noses at it.

The dried meat was all home and the depots of fresh caribou meat in the interior seemed reasonably safe, for they were covered with rocks against wolves, and bears are less likely to be found inland than on the coast. We had plenty of evidence of the number of wolves about. I have always thought that the howling of wolves on a quiet, starlit night was the most romantic sort of music. During the winter in Melville Island we could stand listening outside the camp for hours to the howling of a nearby pack and the replies of others from a distance. Occasionally they came so close that we could see them in the starlight when the moon was below the horizon. On clear, moonlit nights they had the wisdom to keep away, for wolves as we have found them are uncannily careful.

October 25th Storkerson's party got back—all of them, for they had not found the *Bear*. They had not needed to go to the cache at Dealy Island for they had found a depot made in 1910 by Captain Bernier at Winter Harbor. It seems strange that we did not know about this depot. I dined with Captain Bernier in 1908 just before my second expedition, and he told me of depots he had made and of his intention to go North again. I think that in Ottawa in 1913 I must have heard some mention of a depot at Winter Harbor but if so I nearly forgot it. Bernier's books and reports were all on the *Karluk* and lost. But Storkerson now reminded me that in the summer of 1914 when we were waiting for the *Star* on northern Banks Island I had told him and Ole that I thought there was a depot at Winter Harbor and had discussed going there in case the *Star* did not come. We had decided that my vague notion was not to be relied on, and also that the depot at Dealy Island, being more than sixty years old, was too ancient to be relied on either. Anyway, the arrival of the *Sachs* had taken these considerations out of our minds until Storkerson recalled them when, some miles from Winter Harbor, they saw through their glasses a frame house very much of the type you find among new settlers on the western prairies of Canada.

The house proved to contain four and a half tons of food of which there follows a complete list as copied from the record left by Captain Bernier: Pilot bread, 1,000 lbs.; flour, 1,000 lbs.; sugar, 436 lbs.; coffee, 80 lbs.; tea, 112 lbs.; salt pork, 800 lbs.; baking powder, 12 lbs.; condensed milk, 48 lbs.; desiccated carrots, 50 lbs.; mustard, 12 lbs.; pepper, 2 lbs.; salt, 50 lbs.; rolled oats, 100 lbs.; smoking tobacco, 10 lbs.; chewing tobacco, 21 lbs.; Bovril, 240 lbs.; pemmican, 360 lbs.; butter, 60 lbs.; soap, 10 lbs.; matches, 1 gross packages; kerosene, 1 barrel; desiccated potatoes, 10 lbs.; honey, 48 lbs.; peas, 50 lbs.; ginger, 10 lbs.; macaroni, 25 lbs.; beans, 50 lbs.; 1 shotgun with 500 rounds; 1 Ross rifle with 1,000 rounds; 1 lantern; 6 lantern globes; 12 wicks; 10 gal. fuel alcohol; 1 gasoline stove; 1 boat, complete; 2 sledges.

Storkerson found in addition 50 lbs. popcorn, 2 axes, 1 shovel, 1 pickaxe, 1 horse wagon, 1 steam cooker, 103 yards No. 5 canvas, 1 keg 6-penny nails, 1 broom, and a small medicine chest. There was also the following record:

"C. G. S. *Arctic*,
1st September, 1910.

"To whom it May Concern:

"We finish this day our little house covering this cache, and expect to sail to-morrow morning for our destination.

"The wind is strong from the North and the ice is going fast to the south. The harbor is clear of ice, and part of the straits.

"All hands are well.

"Whoever touches this cache has to inform the Hon. Minister of Marine and Fisheries, Ottawa, Canada, as soon as he can.

"This cache is intended only for shipwrecked crews in case of bare necessity.

"Given under my hand this day, the first day of September, Nineteen Hundred and Ten.

(Signed) "J. E. BERNIER,
"Commander."

I quote from my diary the following comment: "Seeing the provision of this document is such, we shall have to assume the position of shipwrecked men, for some of the things (kerosene, canvas, sleds, gun and ammunition) we need; and the other things some of us think we need. It would not be possible now for me to keep our tribe from these fleshpots without causing discontent that would hamper our work.

"The lantern and globes are especially a godsend—with the oil. Now we can travel at night even when there is neither moon nor star, which would have been difficult nearly to impossibility otherwise."

From the depot Storkerson had brought the following articles across the isthmus to Liddon Gulf, caching most of them there with intent of taking them later up to Cape Grassy: Flour, 250 lbs.; kerosene, 12 gallons; milk, 18 cans; dried vegetables, 20 lbs.; sugar, 100 lbs.; pilot bread, 125 lbs.; coffee, 40 lbs.; jam, 20 lbs.; butter, 20 lbs.; potatoes, 30 lbs.; 1 Ross rifle and 200 cartridges; 10 fathoms of rope; 8 feet of boards; smoking tobacco, 3 lbs.; chewing tobacco, 4 lbs.; pepper, 2 lbs.; salt, 5 lbs.; baking powder, 4 lbs.; pemmican, 10 lbs.; and Bovril, 10 lbs.

This is the list as given me by Storkerson at the time. It can be seen from discrepancies between it and Bernier's list supplemented by Storkerson's original statement that we never had a correct inventory of everything found in the depot. For instance, neither Storkerson nor Bernier mentions that there was jam, and yet Storkerson mentions caching twenty pounds of it in Liddon Gulf. Still there were no important items beyond those mentioned either by Bernier or Storkerson.

Storkerson and I were at first alone in thinking the discovery of this food cache a nuisance, but before winter was over nearly every one agreed with us. Storkerson said that before this, while they had nothing to eat but ovibos meat and nothing to drink but the broth, there were only two of the men who kicked and even with them it was largely a matter of form. But now we had all the troubles of a boarding house. My diary on October 31st tells it thus:

"Discontent and bickerings have resulted from finding the food at Winter Harbor. Before, there was plenty of meat and there was nothing else. There were only one or two men who complained and the rest resented their complaining. Now there are various foods besides meat. This increases greatly the time of cooking and the fuel consumption (making the house uncomfortably hot). Where formerly one pot of meat furnished soup for drink as well, it now furnishes only meat, and coffee must be boiled in addition. These delays several of the men, including myself, find annoying in the morning when there is work to do, and the women object to getting up earlier to do the added cooking. Then some want to save such things as butter. Because they are fond of them they want to make them last; others because they are fond of them want to eat them up at will. While two of the men have a passion for butter that leads to gluttony, one of them has a reverence for it that approaches worship. Some want coffee every meal; some want it occasionally "for a change" though they prefer tea in general; some are fond of it but want it only once a day so it may last a long time; others are fond of it and want it every meal. No one but Castel cares much for potatoes but when I wanted to give him more than his share of them nearly everybody else objected.

"The kerosene, lantern and hardwood are useful. I wish Bernier had left more of such things and no grub."

The potato subject related to an arrangement for placing Castel in charge of the outfitting base at Cape Grassy, for, although the Eskimos up there had their excellent qualities, I knew them to be a little lackadaisical in providing against the future. No part of their new Christian knowledge is more welcome to them and less necessary than the behest from the Sermon on the Mount, "Take ye no heed for the morrow." They have not the proverb but their whole lives are an exemplification of the belief that "The Lord will provide." In the Arctic He usually does provide for each day according to its needs; but we wanted to get a few days ahead so as to have a good start in the spring. Now that Castel was to be in command of his own detachment I wanted to outfit him as much in accordance with his tastes as possible, hence my idea of giving him all the potatoes we had. In general I wanted to take to Grassy most of the groceries from the Bernier cache, intending to station there the few men who preferred groceries to meat. When groceries were available there was, of course, no reason why whoever wanted to live on flour and biscuit and beans should not do so, providing they ate enough fresh meat along with these things to prevent scurvy.

I was once nearly a vegetarian, not by principle but by taste. The reason I prefer meat in the North is that caribou herds are more numerous than restaurants or groceries. But now we had a grocery store at Winter Harbor and there seemed no reason why we should not eat hard bread and honey as well as dried meat, for the same government that had sustained Bernier's expedition was sustaining ours, and knowing well the kindheartedness of Bernier himself, I felt sure that even he would be willing to look upon our men in their present state of desire as coming within the meaning of the "shipwrecked crews" mentioned in his proclamation.

And in a way it was shipwreck, since our ship had not come and this would normally mean that she had been wrecked. I could well imagine under what headlines the news of our situation might have been printed if some one had brought it to the yellow journals. In high capitals (red in some cases) it would have been something like this: "DARKNESS OF ARCTIC NIGHT DESCENDS UPON HELPLESS PARTY MAROONED ON MELVILLE ISLAND." Bernier's four and a half tons of food, when you considered what sort of food it was, would certainly not feed seventeen of us till we could be rescued in the spring, even should we begin with rations and end by killing and eating all our dogs.

Public sympathy can easily be stirred over the wrong situations. In 1897 several United States whaling ships were held in the ice at Point Barrow, and the owners in New Bedford and San Francisco considered that the ships were well provisioned and in no danger. But this was recognized as merely the heartlessness of capitalists who did not care if scores of American citizens starved to death so long as it cost them nothing. There was a newspaper outcry from coast to coast, appeals for the poor imprisoned whalers and denunciations of the ship owners, and eventually Congress sent Lieutenant Jarvis and a special relief expedition driving reindeer to Point Barrow. When the Coast Guard officials arrived some of the crews seemed on the verge of insubordination and possibly the whaling officers might have had difficulty in controlling them. There was also danger of scurvy. But in this regard the value of the medical advice was probably overrated, for as every one now knows, the medical man of that day had no understanding of the fundamentals of scurvy and prescribed methods which were about as appropriate as the panacea of bleeding was a century earlier.

But as for starvation, the crews were so near it that they had food to throw away, and actually did throw away tons of fresh meat which they could not transport when they sailed away in the spring. The facts are known to every whaler and traveler who has been on the north coast of Alaska but they have not been generally published, and Congress voted a medal to the "rescuers." It was as heroic an undertaking then as the carrying of mail is to-day to Point Barrow, and that is done three times a winter for the munificent pay of the American postal department. The coast the party traversed between Bering Straits and Point Barrow was settled then as now by Eskimos, except that there are two school houses now on the four hundred-mile stretch. But one thing done was creditable as a performance and led to good, although unplanned results. William T. Lopp drove the reindeer to Barrow under difficult conditions because reindeer driving was new to him and to the country. This drive was useless so far as rescuing any starving men was concerned and it was a pity that any of the animals were killed to make a show of being used to relieve distress, for the remainder became the nucleus of the reindeer industry of northern Alaska which is now making the natives wealthy and Alaska a meat-exporting country.

Despoiling the Arctic of its heroism is likely to be about as popular as taking candy from a child, and especially in Alaska which is poorer in hero tales than most other sections of the North. It could not well help being poor in them from the preponderance of quiet, competent, and unemotional men there, the whalers, traders and pioneers in search of gold. But in towns such as Nome, and especially among those men in the towns who have little experience outside of them, I have found hero stories not only popular but believed in—even the one of "the Rescue of the Starving Whalers at Point Barrow."

So I cite for my support—and do it gladly, for it invites attention to a delightful and instructive book—Archdeacon Hudson Stuck's summary of the incident on page 236 of "A Winter Circuit of Our Arctic Coast" (New York, 1920). He is more apologetic than I, not entirely, I trust, through temperament but partly because he made but one journey along the open north coast of Alaska and himself found it uncomfortable as compared with the sheltered forest trails of the Yukon valley where the thermometer may drop low but the wind seldom rises high. He comes to the conclusion that this so-called relief expedition was "creditable" but useless, so far at least as starvation was concerned: "It was evident that the stories of starvation were untrue (Mr. Brower tells me that he had warehouses full of frozen caribou carcasses) and indeed the condition of the deer (driven to Point Barrow by the "rescue" expedition) was such that they would not have afforded much food until they could be fattened. Yet the intent was praiseworthy."

Mr. Brower (who was living at Barrow then and has been ever since) has told me that in addition to the storehouses full of meat there were hundreds and perhaps thousands of caribou carcasses scattered over the prairie in the vicinity that were allowed to rot or to be eaten by birds and beasts. And this is the uniform story of the men I have seen who were there, whether whaling captains or ship's officers, traders or Eskimos.

It was my intention not to use any of the dried meat for man or dog during the winter beyond an occasional meal for the Eskimos who are very fond of dried meat. Storkerson and I made as careful an estimate as we could of the amount of fresh meat eaten per day by our seventeen people at the two camps and about fifty dogs, and came to the conclusion that about forty or fifty more ovibos were needed to take us up to the time of starting for the ice trip, with some left over for the women who would be alone at home for a few weeks when all the men were getting the spring work started. There were several herds in the neighborhood. One of these appeared at a distance to have between thirty and forty animals in it. There were other herds nearer but as it is more convenient to kill a whole herd, we decided on this one. On October 26th Storkerson, Castel, Noice, Lopez and Emiu went out, prepared to stay away from the home camp one or two days to complete the skinning.

The common Eskimo method of killing ovibos I have described. It is to set a few dogs on the herd to hold them in a defensive circle and then to stab the animals with spears. Latterly this method has been modified where rifles have come in and shooting now takes the place of the spearing, whereas in the old times the bow and arrow were occasionally used. The northern Indians who, to judge by my own experience and the accounts of Russell, Hanbury, Pike, Whitney and others, seem to understand the ovibos about as little as they do methods of living and traveling in the country which the ovibos inhabit, used dogs also. It is possible that their ill success in some of their hunts is due partly to some difference in habits between the ovibos of the mainland and those of the islands.

I shot two ovibos as all we needed out of the fifteen or twenty seen during the spring of 1915. When Storkerson first went to Melville Island early in the winter of 1916 he had with him Illun who had killed ovibos on the mainland. Apart from him there was no one in our various parties who had experience, except that Alingnak had seen them as a boy and heard much about how they were killed.

It was due to this inexperience that there developed among us in Melville Island two distinct methods of killing ovibos. In Storkerson's party dogs were sometimes used but the essential idea was that the men formed a circle around the herd at fifty or a hundred yards. Rarely a herd would stampede away from them and disappear. They commenced shooting the biggest animals and went on down to the calves, but with our powerful rifles the same bullet frequently went through the body of more than one animal. However, their anatomy is so well concealed by the tremendous mass of wool on the shoulders that most of the men did not soon learn how to hit the hearts, and the brain or spinal cord proved a rather small target. As a result, it commonly took five bullets or more per animal to kill the entire herd. The wounds were almost anywhere in the body, and especially when the bullet had passed through the intestines it was hard to make a clean job of the butchering.

This method was inferior to the one developed by Natkusiak's party at Cape Grassy. Natkusiak told me that it occurred to him one day to see how close he could get with safety, and that he got so close that he could touch the heads of the animals with the end of his rifle. If they charged, it would be one at a time and he could always kill that one. He told me that the latter part of the summer his party had scarcely ever been more than ten yards away when shooting and commonly enough the powder would singe the hair. The animal stood with lowered head and the bullet could be placed in the back of the neck just at the base of the horns, resulting in instant death and clean butchering.

Occasionally, perhaps frightened by something else, a herd will run away on the first approach of danger. If they start running they are more difficult to overtake than caribou, which seldom run more than eight miles. But commonly when ovibos are alarmed they will run to the top of the nearest small knoll and make a defensive formation spoken of as a circle or a square, although I have seen triangles and various irregular formations. Usually the big animals are on the outside with the calves in the center. When there are two they will stand tail to tail and when three they make a three-pointed star. If danger is approaching from one side only they may form in two or three lines with the biggest animals in the front rank and the smallest in the rear. Their central idea is one of defense though they may charge upon occasion. Two animals may charge together but I have never seen a whole band do so, nor have I heard of it. Usually they charge singly, each one making a short rush of from ten to fifteen yards, then whirling rapidly, running back to the herd, facing about once more, and backing into line.

Besides the most obvious reason for killing an entire herd instead of several animals out of each herd, there are the following advantages:

The animals stand in such close formation that you can rarely be sure of killing one without wounding others. These wounded animals would probably later die or become a prey to wolves.

If the big animals of a herd are killed the remaining calves and yearlings would probably be unable to defend themselves and would be killed by some band of wolves.

Wolves and bears are continually prowling about and if you have meat depots in many places they cannot all be guarded, but when a large number of animals are killed in one place you can have a man camping beside the kill until all the meat has been hauled home.

You also want the whole herd because of the various qualities of the meat. The biggest animals are commonly fattest and the fat is precious, but the meat of these is often very tough and not so suitable for human food as that of the younger animals. I have never known any one who preferred the small calves, but the yearlings are commonly considered best. There would be no advantage in letting the calves escape, for without the herd they would be killed by wolves.

It is curious that even zoölogists have fallen into the notion that ovibos live on lichens and mosses. Apparently this follows the assumption that there is little polar vegetation except cryptogams. Any good anatomist should be able to tell by a glance at the mouth of an ovibos that he is a grass-eater. Most lichens, including the so-called caribou moss, are shrinking plants that are easily picked up only by animals with prehensile lips, such as sheep or reindeer. A cow has a clumsy mouth not adapted to picking up small things and gets the grass into her mouth by sticking out her tongue and using it as a hook to pull it in. So do polar cattle.

Ovibos live on grass and other phanerogams, a fact which should be well known but is not, for zoölogists persist in assuming that their bones found in southerly countries prove that there must have been in those parts a contemporary vegetation abounding in cryptogams. And the curators of highly respected zoölogical museums mount ovibos realistically in glass cases to show school children and others how they scratch lichens for food from underneath the snow. These are probably the only ovibos who ever had their mouths full of lichens. Still, cattle and horses will eat strange things when put to it, and it is not impossible that a herd might stray into a neighborhood where no other food is available, and while they could not pick it directly off the ground as caribou can, they could, of course, always scratch it up and eat it off the snow.

When hunting ovibos in winter we frequently see quantities of moss and lichens scattered over the snow where they have been feeding. But the things a man leaves on his plate are not necessarily identical with those he has eaten. To find out what ovibos eat you must either observe them extremely near or else cut open their paunches. The first we have never done, but of paunches we have opened several hundreds. These have always contained prevailingly phanerogams with no more moss or lichens than you would expect to find mixed with the grass when it is pulled up. But Storkerson tells me that he has opened paunches where moss formed a high proportion—not caribou moss, which is a lichen, but various real mosses.*

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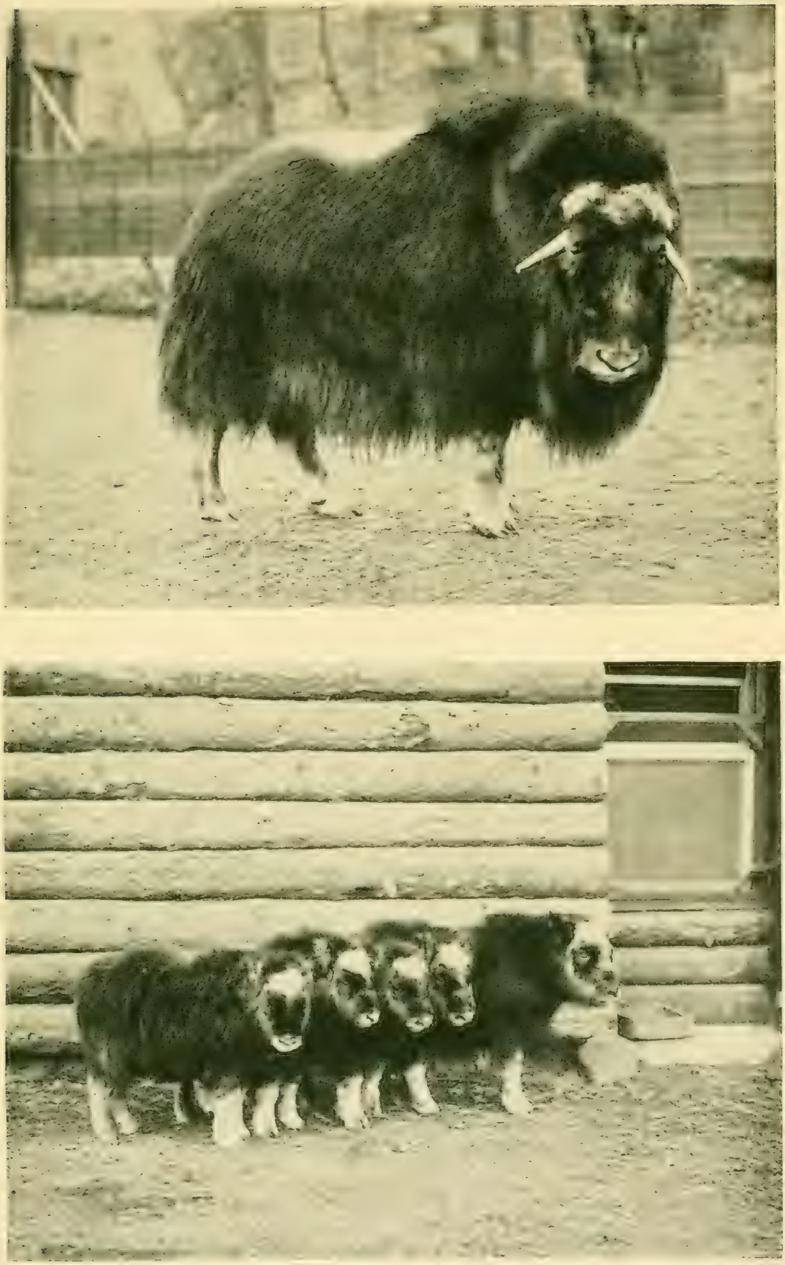
* A friend who has read the proofs of this book wants me to put in here a footnote saying there is grass in winter on the polar lands. I had not thought



Musk Oxen under Domestication—Bronx Park, New York.

A Polar Coast in Summer—Cape Parry.

A Polar Coast in Winter—Melville Island.

We lived almost entirely at Storkerson's camp on ovibos meat and the white men preferred to continue doing so, but the Eskimos were hungry for caribou meat and insisted on having it brought in. The depots were in very rocky country to the east and I was reluctant to send sledges for it until later in the season, for the shoeing easily gets worn through, and sled shoeing is the most valuable and indispensable of items in work such as ours. But eventually we yielded and the meat was brought in. For two or three days there was much talk among the Eskimos about how much they preferred the caribou meat and no doubt arguing against them would have kept them of the same opinion. But by quietly refraining I was able to observe them gradually forgetting the superiority of the caribou meat and a good deal of it was eventually fed to the dogs. This was not because the ovibos meat was superior but rather because it was fatter. In my opinion not one person in ten could even when on his guard tell an ovibos steak from a beefsteak, unless there were bones in the cut to enable one to tell through anatomical difference. Peary has said that ovibos meat is better than beef, but he probably meant merely that his appetite was better when he was eating it. To me the two meats seem identical.

As the name ovibos implies, we have here a cow or ox with a coat of wool. The entire body is covered with long, straggling, stiff black hair, in nature similar to the mane of a horse. In the roots of this hair grows wool. The wool is shed every spring but the hair is never shed. Furriers prefer skins with as little wool on them as possible and ovibos killed for commercial purposes have therefore been killed in the autumn. Through the autumn and early winter the wool gradually thickens and by spring it bulges out all over the animal, but especially on the shoulders. Their bodies are heavy forward, anyway, somewhat after the style of the buffalo, but a great exaggeration of the hump is produced by the mass of wool that covers it. In April and May the wool is shed. These are short-legged animals and when you have a side view of them at the shedding season frequently the legs cannot be seen at all for the curtain of wool that hangs to

this necessary. Grass has neither legs to run nor wings to fly, and decay does not come till the following summer. Then where should the grass disappear to? The snowfall is far less than in such countries as Montana, where stock feed out all winter. Then wherewithal should the grass be so covered that animals native to those regions have any difficulty in getting it? That polar cattle are fatter in January than in July shows equally that they can get the grass in winter and that the grass is nourishing.

the ground. They drag it in long tags after them as they walk and these can be picked up on the ground. Although the hair is not properly shed, a few pieces break off, as may be the case with the mane or tail of a horse, and straggling hairs are, therefore, found in the wool.

We have already described ovibos as having several characteristics unique among grazing animals. But there are others. So far as I know, they are the only herbivori that do not roam in search of pasture. While they generally avoid lichens and mosses, they eat all the grass in their neighborhood and move only as fast as the feed is removed. Eskimos go so far as to say that if you see a herd here this year you will find them not far from here next year, and Hanbury quotes the Indians of Slave Lake as having a similar saying. This is emphasizing the fact by over-statement, for in such pasture as Melville Island they move from three to six miles per month. When they come to a really rocky or barren patch, they may make a move in an hour or two covering several miles. In a rich country like Banks Island, which probably averages from five to ten times as much vegetation to the square mile as Melville Island, a herd of thirty or forty animals might not move more than a mile in a month.

In Melville Island ten or fifteen animals make up a typical herd and I have never seen more than forty in a herd, strictly speaking, although I have seen over a hundred scattered over a few square miles of flat land in such a way that one might take them for a single herd.

They are peculiar among powerful animals in that they seldom attack and seldom flee. They have the military principle of the British square, but they have never developed the theory that the best way to defend yourself is to attack. Indeed it would not be the best way for them. It may be that animals of the type of panther preyed upon them long ago when they lived in southerly lands, but in the Arctic they have, when the calf stage is once passed, a defense against every enemy that troubles them, except man. Polar bears might be expected to prey on them but we have never heard of this nor seen any evidence of it, and I doubt very much whether a bear would fare well if he attempted to attack more than one ovibos. Neither do I know which can run the faster. Both are clumsy but both are at home in rough going.

Reindeer and sheep are milked for butter and cheese-making in certain countries. Ovibos give more milk, probably richer in butter fat, and of a flavor either identical with the richest cow's milk or differing less from it than any other milk does. They have wool that seems as good as sheep's wool for garments, although this wool has not yet been fully tested. It certainly has the advantage that garments made of it will not shrink. Each animal gives more wool than a sheep,* and of meat it gives three times as much. The annual meat output would not, however, be treble that of the sheep, for it probably takes ovibos four years to mature.

When we sum up the qualities of ovibos, we see that here is an animal unbelievably suited to the requirements of domestication —unbelievably because we are so habituated to thinking of the cow and the sheep as the ideal domestic animals that the possibility of a better one strikes us as an absurdity. We have milk richer than that of cows and similar in flavor, and more abundant than that of certain milk animals that are now used, such as sheep and reindeer; wool probably equal in quality and perhaps greater in quantity than that of the domestic sheep; two or three times as much meat to the animal as with sheep, and the flavor and other qualities those of beef. When you add to this that the animal does not roam in search of pasture, that the bulls are less dangerous than the bulls of domestic cattle because not inclined to charge, and that they defend themselves so successfully against packs of wolves that the wolves understand the situation and do not even try to attack, it appears that they combine practically every virtue of the cow and the sheep and excel them at several points.

They are now living prosperously on the north coast of the most northerly land ever discovered and on every arctic island on which they have ever set foot except those from which they have been exterminated by man. That there are only a few hundreds or thousands now surviving on the continent of North America where there must have been millions at the time when they extended south to the Ohio, may seem to indicate some unfitness for competing with the environment. But probably there has been no unfitness except inability to compete with man.

Zoölogists generally assume that ovibos have died out from the southerly lands they formerly inhabited as a result of a change of climate, possibly through bacterial attack, possibly because the vegetation became unsuitable. But the habits of this animal are such that they and their human hunters armed with even the most primitive weapons can never permanently occupy the same area. In Melville Island we killed entire herds when we needed them. The Eskimos kill entire herds whether they need them or not, and so it has probably been with primitive man since the earliest stone age. We assume that man as a hunter gradually spread northward. Then need we assume any other cause for the gradual extinction of the ovibos? It seems to me not, unless it can be definitely shown that they were extinct before the first hunters arrived.

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* Here we have no direct evidence except the statement of Dr. W. T. Hornaday, Director of the New York Zoölogical Garden, who estimates that one animal kept there in captivity yielded fifteen pounds of wool per year. The uncertainty consists in the fact that the wool was not actually weighed but merely estimated.

But the very qualities which make it impossible for them to compete with man as an enemy qualify them admirably for becoming his ally in the sense of the domestic animals. In tropical and subtropical countries some domestic animals need no help from man except protection against predatory animals. But in the climate of protracted winter they need greater and greater coddling. No blizzard ever blew that inconvenienced the ovibos nor has any one seen proof that they find the cold uncomfortable. Generally they are fattest in winter and if they get poor in the spring, that seems to be connected with their breeding habits rather than with the severity of the weather. They need no barn to shelter them, no hay to feed them, no protection from any enemy except man himself. Possibly their southward extension may be limited by hostile microbes or bacteria, but of that we as yet know nothing. Meanwhile I take it to be certain that part of the approaching development of the North will be their domestication.

The domestic reindeer * has many attractive qualities. For fifteen hundred years certainly, and perhaps for millenniums before, it has been the main domestic animal of millions of north Asiatics about whom we Europeans do not know very much. Neither did they know much about us until lately. But the meat of the reindeer is becoming yearly a more and more important food of the Scandinavians and north Russians, and in Europe it appears in new markets every year. In America the industry is a success in Alaska and a small amount of reindeer meat is sold at luxury prices from Seattle to New York. The reindeer is already with us as a factor in the meat supply. Reindeer can convert into delicious meat the billions of tons of edible vegetation that go to waste yearly on

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* There are many breeds of domestic reindeer and many varieties of wild caribou. But the difference between the smallest domestic reindeer and the largest wild caribou is no more than that between Jersey and Shorthorn cattle. Nor do they appear to differ in food habits or hardiness. Where the wild caribou thrive in spite of wolves, there should the domestic reindeer, protected from wolves by man, thrive even better.

the northern prairies. But although they need no shelter from the climate nor help from man in securing their food, they fall an easy prey to the wolves and present the same herding difficulties as domestic cattle.

We need clothing as well as food, wool as well as meat; and for this and several other reasons I would suppose that the ovibos and not the reindeer will a century hence be the chief domestic animal of the northern half of Canada and the northern third of Asia. Of course it is possible to imagine all sorts of difficulties in domestication. The only way to settle such a problem is to try it out, and the prospect of success is so good that the trial is sure to be made.*

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*I hope the reader will not think that I imagine myself to have dealt in this chapter with every serious problem connected with an attempt to domesticate ovibos. This is not a book about the commercial possibilities of the North, except incidentally, and this chapter is frankly a digression from the main theme. But information as full as it can possibly be before the thing is actually tried is now available.

The winter of 1919 the Honorable Arthur Meighen, then Minister of the Interior but now Prime Minister of Canada, became interested in the possibility of domesticating ovibos and in the other proposals that had been made for utilizing the food-producing resources of northern Canada. At his instance an order-in-council was passed and a commission appointed of three men thoroughly qualified to render a just verdict. Mr. J. S. McLean is manager of the Harris Abattoir Company, one of the largest meat packers of Canada. Mr. J. B. Harkin is Commissioner of Dominion Parks and in that capacity has familiarity with the success under semi-domestication of the various big game animals in the Dominion parks and especially of the large herd of bison at Wainwright. The chairman of the commission, Dr. J. G. Rutherford, is one of the leading animal husbandry men of Canada and has made a study of just the problems that will be involved if an attempt should be made to domesticate ovibos. This commission has gathered evidence from most of the available witnesses. A digest of this evidence has already been submitted to Parliament. It will doubtless soon be printed and will then be available to those who write for it to the Department of Interior, Ottawa. In it we have a body of information which should destroy much of the superstition about the vegetation and climate of the North and the suitability of the arctic and subarctic lands for the production of meat on a commercial scale, whether they are reindeer, polar cattle, or some other suitable animal.

## CHAPTER LVI

### THE FOURTH MIDWINTER, 1916-17

THE departure of Storkerson, Castel, Noice and Emiu for Cape Grassy was made on the last day of October. They had two sledges loaded with seven hundred pounds each of dried meat and seal oil in addition to camping gear and some fresh meat intended for dog feed. Their program was threefold. They were to build a line of snow camps which could be used as roadhouses on the trips that we expected to make back and forth during the winter. They were also to get this much dried meat forward to Grassy; and, finally, they were to establish Castel in charge of that place from which he would continue any useful operations possible. If there still remained in the field any ovibos meat that Natkusiak had not brought home, this was to be gathered at Grassy. Natkusiak with the sled he had broken the previous summer was to come down to Winter Harbor where, through the fortunate find of iron and hard wood left by Captain Bernier, we should now be able to repair it. On the way north Storkerson's teams would pick up the groceries and kerosene brought from Bernier's cache and left a few days before near the foot of Liddon Gulf.

The loads that Storkerson took were exceptionally heavy, considering that many of his dogs were small. His object was to get to Grassy in time to return by the next full moon.

Charlie's hand healed presently and he and Lopez kept steadily at work hauling home the meat of the thirty-eight ovibos killed October 26th, while I worked up the information secured during the preceding spring and summer, and recorded ethnological information obtained chiefly from Mrs. Lopez. She was a good informant and told much about the folklore and practices of her people that interested me. But one day she told things about her husband that interested me quite as much.

It is not easy to tell how children pick up prejudices against certain foods, but such a prejudice is ordinarily tenaciously retained. Until I was twenty-seven I had the belief about myself that I could not eat fish and felt certain that its taste was obnoxious to me. I thought it an interesting peculiarity and assumed that everyone else would think so, and there were few things I told about so often as the fact that I was peculiar in that I could not eat fish. I think I might have lost the notion sooner if it had not formed such an excellent topic of conversation. And so I imagine it is with many who have similar beliefs about food.

The peculiarity about Peter Lopez was that he could not eat fat. He had a story to explain this. The explanation ran that when he was a small boy in the Cape Verde Islands fat was expensive and he was forbidden to eat more than the share that came to him as one of several children. But one day when nobody was looking he made away with the allowance intended for the whole family. His mother to punish him melted up some lard and compelled him to drink it. This overdose caused nausea and from that time on he had an unconquerable repugnance against fat in all forms. This he had kept through all the vicissitudes of his career as a whaler in the Arctic and as a trapper married to an Eskimo wife and living among Eskimos.

Now came the time when he learned that I intended to abandon the *Star* temporarily and take him with the rest of our crew to Melville Island where they would all have to live on meat. He approached me on the subject of whether he might take an extra allowance of sugar for himself to Melville Island since he could not eat fat, and I vetoed it on the ground that where everybody is more or less fond of sugar it would not be practicable to allow one man to have more than the rest. Neither did I have much sympathy with his prejudice, thinking that he would get over it as I had got over mine. But he was certain that he could never learn to like fat.

When the party reached Melville Island they had some sugar. After it was finished Lopez began to feel increasingly uncomfortable living on meat from which he carefully trimmed off all the fat. His wife kept urging him to try a little tallow or a little boiled suet or some marrow, either raw or cooked, but he refused. It presently became evident that he was losing flesh rapidly and eventually he became actually ill.

And then one day his wife caught him surreptitiously eating a piece of fat. At first he became angry at her spying on him, and he forbade her to tell. But the joke was too good to keep and she told everybody, whereupon Lopez owned up and began to eat fat openly. He recovered his health, flesh and spirits in a few days and by the time I arrived in the fall he prided himself on being able to eat more fat than any Eskimo in the party. As for that he could, but it was merely because he was a big man and working hard. Eskimos on the average eat neither more nor less fat than white men or negroes do under the same circumstances.

Full moon came on the 9th or 10th of November and we expected Storkerson to leave Cape Grassy and arrive in a week at the isthmus where the crossing is made from Liddon Gulf to Winter Harbor. He would have with him Natkusiak and the crippled sled. Lopez and Charlie were to meet them there and the several sleds would go over to Winter Harbor where the party would stay long enough for these to be all repaired and in thoroughly good shape for the spring work. It is one of the conveniences of the Arctic that some of the moons in this latitude do not set for as much as four or five days, affording when the sky is clear almost as good traveling conditions as perpetual daylight.

Charlie and Lopez left for the rendezvous on the 17th and by the 30th they had been away so long that I was beginning to expect at least one team back. That evening both men returned with the astonishing news that Storkerson had not yet arrived from the North. With the dried meat that was to be relayed to Grassy they had gone to the Liddon Gulf end of the portage and had camped there waiting for Storkerson until they and the dogs had eaten up the whole load, and now they came home with an empty sled. We could not guess what had happened and had another time of worry, until December 9th Natkusiak arrived with a letter. This made everything clear but the news was not good.

On the way north, Storkerson wrote, they had been delayed by head winds and by weather so cold that some of the dogs froze their flanks. This can never happen from mere cold but only from a combination of low temperature with high wind. On the way north they had lingered to search for game on the portage between Liddon Gulf and Hecla Bay but had been unsuccessful, owing to cloudy weather and absence of daylight. When they reached Grassy Natkusiak had made attempts to fetch meat from inland and there had been further delay through his inability to find his depots promptly, this again because of storms and darkness.

At last they started back, and there was no untoward incident until in crossing south from Hecla Bay they steered too far west and did not come down to sea ice until in Barry Bay. This resulted in one of the serious misfortunes of the expedition, though it might have been only trivial under different circumstances.

Getting lost doubled the distance overland, which of itself was of little consequence. But this was a mountainous country full of precipices. It was now the dark of the moon and with continual storms they had no light at any time. From Natkusiak's account and from all other accounts later they had many narrow escapes from death. These were the things that might have been serious. What actually was serious was that they had to drag their sledges for miles over rocks, so that the steel runners were weakened on some till they were no longer reliable and on one they were worn away completely.

Now we should have been practically helpless but for Bernier's sleds and boat at Winter Harbor. Our tools were inadequate and Bernier had left none, but his sleds were of a type so unsuited to our work that we had to find some way of removing the shoeing and transferring it to our sleds. It was not the right width nor the right quality but it had to do. Most fortunately there was a shoeing not only on his sleds but also on the boat, for it had been made with the idea that it might sometimes be dragged over ice. We were reluctant to strip a boat left there for a definite purpose, but we had found Melville Island such a good country to live in that we thought any shipwrecked people could well spend the winter there, and if they wanted to leave it, it would be easier to walk out than to depend on a boat in the early spring, no matter how good for getting out in summer. We thus made use of what Bernier had left to further our success, not to insure our safety.

Storkerson's party would have to spend a long time at Winter Harbor, certainly weeks and perhaps a month. This brought to my mind more forcibly a fear that he and I had already discussed. Until the discovery of Bernier's depot we had not worried about scurvy but now the danger was imminent unless we were careful. I cautioned Storkerson and indeed all the men to be sure to eat plenty of ovibos meat along with the Winter Harbor groceries, and if necessary, to feed groceries to the dogs so as to leave fresh meat for the men.

This gives excellent opportunity for a digression on the subject of scurvy but there is no space. Any one interested can get the facts about this disease from the medical literature of the last half dozen years. If he goes a little farther back than that he may get interesting reading but not many facts. For up to the beginning of the Great War most of what was believed by the medical profession about scurvy would be classed now by an unfriendly critic as superstition and by a friendly one would be given some other name with the same meaning.*

Briefly reviewed, the situation is this: It had been believed for more than a century that lime juice is a specific against scurvy. But every polar expedition has been outfitted with lime juice and nearly all of them had scurvy. Lime juice has been administered in large quantities to those who have had scurvy and many of them have died. The blame was always laid on the poor quality of the lime juice, its deficiency in acid content and the like. It did not occur to any one that while the effect of lime juice on scurvy is positive and rapid if it is freshly bottled, juice several years old has no appreciable preventive or curative value. Something has been made, and rightly, of the fact that lemon juice is better than lime juice, but the central fact is that either of them or any antiscorbutic whatever loses its value, rapidly or slowly, with storage.

In popular stories dramatic cures of scurvy are often made with raw potatoes or raw onions. In fact, a raw potato is one of the regular stage properties of the novelist and dramatist of the far North. But they emphasize the potato where they ought to emphasize the eating of it raw. Fresh vegetables if raw have marked antiscorbutic value, but this is lessened or destroyed by either cooking or storage, and especially by a combination of the two. Entirely raw fresh milk is an antiscorbutic but pasteurized milk has either little antiscorbutic value or none. There are probably few foods which do not have antiscorbutic value when raw, whether they are vegetable or animal, fish, flesh or fowl.

That is the secret of preventing and curing scurvy. Every one of the food items left by Captain Bernier at Winter Harbor, although in apparently perfect condition, was devoid of antiscorbutic qualities. These would all have to be supplied by ovibos or caribou meat, eaten not necessarily raw but underdone.

The history of the winter in Melville Island is so complicated that it must in general be omitted. Our plans were overambitious. The summer had gone so well that we laid out too big a program for the winter. It seemed, too, that everything that could possibly go wrong did go wrong and that every chance was decided against us. Bad weather always struck the traveling parties at critical places where losing the trail meant getting entangled in mountains

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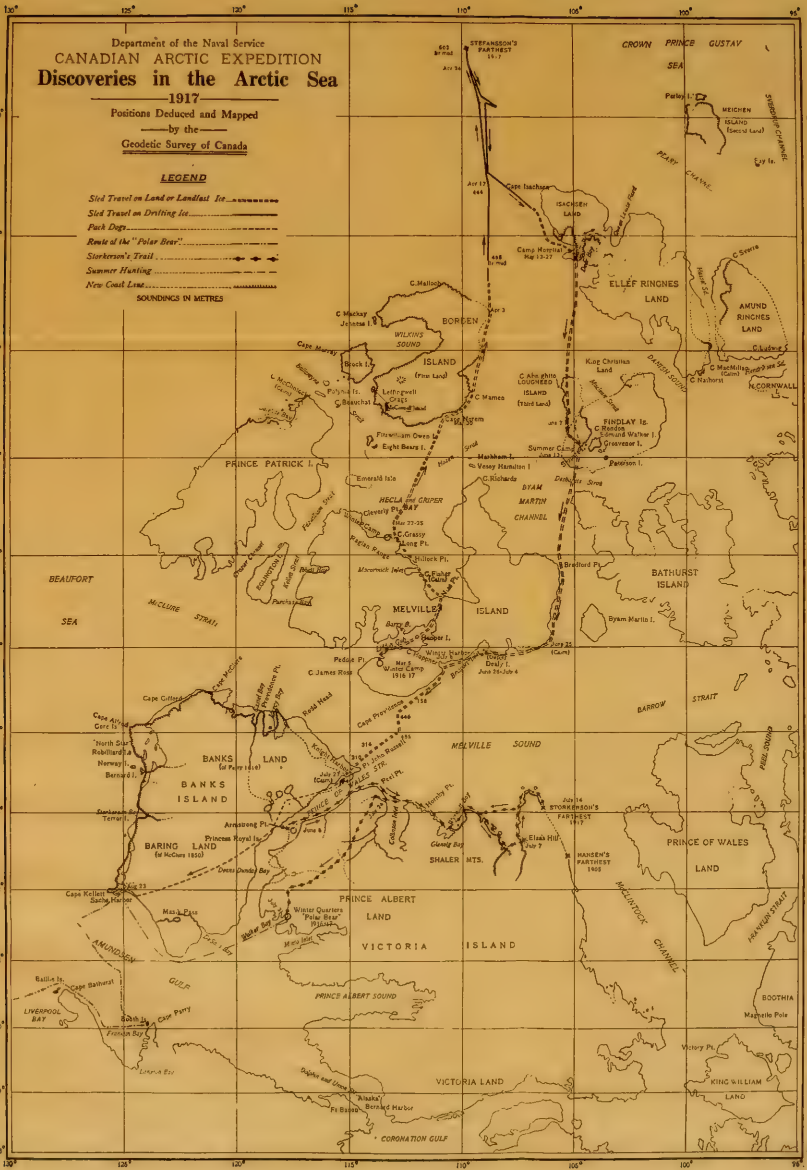
* See *The Journal of the American Medical Association,* Nov. 23, 1918, Vol. 71, pp. 1715-1718, "Observations on Three Cases of Scurvy," by Vilhjalmur Stefansson; and *Medical Review of Reviews,* May, 1918, "Original Observations on Scurvy," by Vilhjalmur Stefansson.



Department of the Naval Service

CANADIAN ARCTIC EXPEDITION

**Discoveries in the Arctic Sea**

1917

Positions Deduced and Mapped

by the

Geodetic Survey of Canada

or among rocks. After Storkerson's experience where he had in a day nearly taken the shoeing off several of our sledges, it became evident that no one must travel over rocks at all, no matter how badly he got tangled in them, unless it were a matter of life or death. There was nothing to do but wait for clear weather or a moon, for now that the Bernier shoeing had been put on our sledges there was none to replace it. On his way northward and back on the first trip Storkerson had made some depots of fresh ovibos meat. These were either rifled by wolves because of some fault of construction, or could not be found in the darkness by the traveling parties. While our summer work has frequently been disagreeable, this was the only winter of our whole experience where any of the men had what could fairly be called hardships. But this winter they had plenty of them.

At first I remained in camp for the sake of the ethnological work I was preparing and because with more men than teams and sledges my help was unnecessary. But during the winter I developed a slight but annoying illness which confined me to the house and threatened to last into the spring. This did not happen, however, for by spring I was almost well and perfectly so before we had to leave the Grassy base.

We had intended to start the spring work this year in January, but misfortunes dragged the preparations on into February. These did not make a great difference except for the hardship to the men and the fact that the dogs were in consequence not in the best condition. One thing you cannot start without is an adequate outfit of good clothing, and our seamstresses were slow in getting the clothing ready because two of them were ill—Mrs. Lopez seriously for a while, and the best one, Guninana, was troubled with failing eyesight which interfered both with the quality and quantity of her work. There was probably nothing wrong with her eyes which a good pair of spectacles would not have corrected, but it was a long way to the nearest optician.

In early February when everything else was in a fair state of readiness we had trials of a more serious sort. The mainspring of the better of our two pocket chronometers broke. There is not much use in a journey such as we wanted to make unless you can carry accurate time for the determination of longitude. None of us were watchmakers but something had to be done, so Storkerson undertook the job. He took out the broken mainspring and then we examined several ordinary watches carried among us and found one which had a mainspring of a similar size and kind. Storkerson took this watch apart and put the spring into the broken chronometer. To do such a job is one thing but to do it well is another and we had little hope at first that we would get a satisfactory timepiece. Immediately when the watch was running we took a star observation and then compared the repaired timepiece day by day with the other, in which, however, we had little confidence. A delay of a week or ten days was imperative to get several time observations, at the end of which we were almost astounded to find that the watch seemed to have as steady a rate as ever, although naturally a quite different one. Of the many useful things Storkerson did for the expedition this was one of the most important.

During the winter we had speculated on what had happened to the *Bear* and there were probably a dozen theories or variations of theories as to why we had not heard from her. Observations of Storkerson's party from Cape Ross had indicated that Melville Sound had been open during the latter part of summer and we thought that a ship could have come through, so it seemed most reasonable that she had been wrecked in the early spring, probably just at the time of the break-up in Prince of Wales Straits. Another theory was that while Melville Sound had been open, Prince of Wales Straits might have been closed, and that the ship was now lying at Armstrong Point, for her orders had been that if she could not come north she was to stay where she was.

Some of the men stated that before they left the *Bear* the previous winter they had heard plans being made for spending the coming winter in Walker Bay on Minto Inlet where the caribou hunting and "salmon" fishing were both excellent and where there were plenty of Eskimos for company. All our people were either Eskimos or white men used to wintering where there were plenty of Eskimos, and it was easy to see that this would be to their minds an ideal wintering place. I took little stock in this explanation of the non-appearance of the *Bear,* however, since Storkerson's verbal report and Wilkins' letter had both said that the officers and crew were anxious to bring the ship to Melville Island. The talk went on that there had been a rumor that I was keeping the expedition north against the orders of the Government and some of the men now thought that the officers of the *Bear,* relying on this rumor, had sailed south to "civilization," counting on Government approval. A variation of this story had it that some one on the expedition had received direct information from the Government that nobody's wages would be paid, and it was said that several of the men had expressed their intention of taking the law into their own hands and sailing south for this reason, for they did not propose to work another year without wages.

I am not telling these things for facts but merely to illustrate the frame of mind people get into in the isolation of the North. The latter two and more remarkable of the four theories were not based upon anything that had happened in Melville Island but rested on talk at the *Bear* the previous year. It is in the idleness of a ship in winter quarters that such stories grow up. In Melville Island we were far too busy to invent anything so elaborate, although there was time enough in the winter darkness to speculate on what was already in our minds.

There were many articles of equipment on the *Bear* which we needed badly and in which the Bernier cache had disappointed us. Nothing had rejoiced us so much as the kerosene and the lantern, but the kerosene proved not half as much in quantity as we had thought and the quality was extraordinarily poor. There are stories from the early explorers of kerosene becoming white and thick with the winter frost and these are true, for in those days the processes of refining petroleum were not well understood. I had thought that such oil was a matter of history, but in the case of the Bernier oil it was now a matter of painful experience.

On one occasion when the temperature was around sixty below zero the kerosene could not be poured out of a jug that had a mouth fully an inch in diameter. In the lanterns it burned badly and in our primus stoves it clogged and would not burn at all. A blue-flame kerosene stove has great advantages over the Eskimo method of cooking with tallow or animal oils, and quantities of kerosene were on the *Bear*. Seal oil is entirely satisfactory for heating snowhouses, which is another matter, but the lamp for heating will take two or three hours to cook a meal which a primus stove could bring to a boil in half an hour. Except for the thought that the *Bear* must be wrecked and unable to help us, we should have felt rather bitter against her during this winter, struggling needlessly along in darkness without kerosene enough to be able to afford lantern light for the man who walked ahead to pick trail.

# CHAPTER LVII

## ARRIVAL OF GONZALES WITH NEWS

FINALLY, the last week in February we had the repaired chronometer rated and were to start next morning for Cape Grassy. Everybody had started, in fact, some days before except Storkerson, Emiu and I, and we with a light sled had remained to finish the rating of the watches. And then, when everybody had long since given up hope, two sledges arrived—Captain Gonzales with Knight, Illun, Pikalu, and a Minto Inlet Eskimo, Ulipsinna.

Captain Gonzales told a story which explained the ship's absence. The *Bear* had been freed from winter quarters about the middle of July and during the latter part of that month and the first part of August she had cruised back and forth across the straits trying to find a way northward. The ice in the strait had been solid across from land to land and had never moved all summer north of Armstrong Point. When conditions were seen to be hopeless, she proceeded south and went into winter quarters at Walker Bay. Wintering there was in direct disobedience of my orders, which had been that the ship should stay at Armstrong Point if she could not come nearer to us, but she had now gone a hundred miles farther away from us. For doing this Captain Gonzales had reasons which he at least considered adequate. The relations with the Eskimos at Walker Bay were reported pleasant and one man besides Ulipsinna was now in the employ of the expedition. Everything was going well on board.

Captain Gonzales brought some news from the outside world. Our former engineer, Crawford of the *Sachs*, in partnership with a man I knew from Nome, Leo Wittenberg, had purchased the schooner *Challenge*, a ship on which I had spent much time when she was commanded and partly owned by Captain Pedersen and had wintered at Point Barrow in 1908-09. She is a schooner of something like thirty-seven tons with gasoline power, but weak, as I knew both from Captain Pedersen's account and from having considered buying her in Nome in 1913 before we chose the *Sachs*. However, ice conditions had been good along the north coast of

Alaska. The *Challenge* had come in without trouble and was now wintering in Minto Inlet, half a day's journey by sled from Walker Bay and the *Bear*. Crawford had left Nome late enough to report that Dr. Anderson's party in the *Alaska*, including Wilkins, had reached Bering Straits. This should mean that their difficulties were over and they were safe home. Chipman and possibly some others had not been with the *Alaska* but had crossed overland from Coronation Gulf to Bear Lake, going home by the Mackenzie River, a more pleasant journey than the sea voyage and one which I much prefer, having tried both routes.

Another piece of news was that Captain Lane in the *Gladiator* the previous summer had been unable to get beyond Herschel Island by ship but had gone out during the winter overland, selling the ship to Ole Andreasen. One of Captain Lane's men had died of scurvy at Herschel Island during the winter.

Captain Gonzales explained why he had not come earlier in the year or sent a sled to Melville Island. He had learned from Crawford—who, on his voyage in, had met the *Herman* going out—that my old friend, Captain Pedersen, of that ship had landed mail for the expedition and certain supplies, including sledge material, at our Kellett base. Captain Pedersen learned then that Thomsen had not attempted the previous summer to carry out my instructions either to return to Melville Island before the break-up of the ice or else spend the summer with his family at Mercy Bay. Instead he was with Captain Bernard at Kellett but intended to leave in November for Liddon Gulf by way of the west coast of Banks Island, bringing mail and two new sledges. He had explained to Captain Pedersen that he knew we were in great need of the sledges and that he would not start from Melville Island until Captain Bernard had these made.

Since these were Thomsen's plans it had seemed to Gonzales best to communicate with him before sending a team to Melville Island. Accordingly, he had sent the Kilian brothers, Herman and Martin, with a fast dog team and a light load early in November with a message, advising Thomsen to go to Melville Island by way of the *Bear* and Prince of Wales Straits at the same time that the party which Gonzales intended to outfit would go. The brothers were to cross Banks Island by the route followed by me the fall of 1915 when one of them, Martin, was a member of my party. Later Martin had returned over the same route with Thomsen, so there was no doubt about his knowing the way. Furthermore, there was now a half-way station, for the *Challenge* had established camp at De Salis Bay at the east end of the overland route, where two men were stationed, Otto Binder and August Masik.

Before they started Herman had told the Captain that they would be able to make the round trip easily in twenty-five days. When they became overdue, Captain Gonzales went from the *Bear* to the trapping camp and learned that the brothers had passed De Salis Bay safely and had picked up Binder. He had formerly been engineer on the *Sachs* and was a great friend of Captain Bernard's so he had decided to go there for a visit. Masik was worrying about Binder, as the Captain was about the Kilian brothers, but nothing was done and the Captain returned to the *Bear*. After his return to winter quarters he continued waiting for the Kilians to come back until they were two months overdue, when at last he started for Melville Island.

After assimilating all the news I summarized it in my diary for March 1st: "The Captain's arrival is fortunate. We are not only relieved of the anxiety as to a possible tragic mishap to his ship last summer but we also now know where to send our people (the women and children). The load the Captain brought is valuable but not indispensable. There are two excellent and two fair primus stoves, over thirty-five gallons of distillate, sealskin boots, etc., that are very valuable. The food part is also of some value, seeing he brought us dogs to haul it, but it will probably not contribute noticeably to our success or materially to our comfort. The anxiety as to the Kilian brothers and Thomsen now takes the place of our former worry over the *Bear*."

The more we thought about the Kilians and Thomsen the more that anxiety increased. I could easily understand Thomsen's not having followed out the instructions of the previous year to return in summer to Melville Island or spend the summer at Mercy Bay. Thomsen was efficient and faithful, but his idea of executing orders was to do so if it seemed wise or else to do whatever seemed wiser. It is always easy to forgive such a man although the results are sometimes bad, especially when coöperation must be arranged from a distance. The world in general is now so used to the telegraph and telephone that it may be difficult to realize how hard it is in the Arctic to coördinate operations of parties in distant places and covering a year or more of time, especially if directions are not followed whenever following them is possible.

March 3rd Storkerson, Knight, Illun, Pikalu and Ulipsinna with four teams started for Cape Grassy. Emiu and I remained behind to get an additional star observation for rating our watches. Two good ones were secured on the 4th. further confirming that our repaired watch was maintaining a steady rate, and the 5th we started to overtake Storkerson, leaving the camp in charge of Gonzales. He and Lopez were to get some coal, for the supply dug in the fall had nearly given out, and some ovibos meat, for that also was running low. The mining would not be easy, for, unlike the Grassy coal vein, the vein that Storkerson's camp relied on was only a few inches thick, embedded now in frozen earth. We traveled rapidly and overtook Storkerson at Hooper Island where he had been stormbound for a day.

It was on the whole rather difficult work. We soon found that we had made a mistake in taking the dogs brought by Gonzales, as most of them were tired and as they were of the small Eskimo variety, anyway, and hardly able to keep up with the rest even under favorable conditions. The weather was exceptionally cold, and cold weather increases the hauling weight of loads. At fifty or sixty below zero the grains of snow have angles sharp and hard enough to act upon the steel shoeing of the sledges somewhat as grains of sand would on a beach. It is one of the things that I have wanted to experiment with by "laboratory methods" and have neglected, but I suppose that a drop in temperature from ten above zero to fifty below must increase by three the strain put on the dogs in pulling a given load.

It is said that other metals run more easily than steel over snow at low temperatures, but those who have read the experiences of Sverdrup, Mikkelsen and others with German silver shoeing will know that, even if steel drags harder, it is better in the long run for unless you get tangled in rocky ground it will last half a dozen years while German silver gives out promptly in rough ice. There is only one shoeing I know that is practical besides steel and that is ice, but this cannot be used on sledges of the Nome type nor on sledges of the Nansen and Amundsen type, as commonly used in the Antarctic also, for all these sledges have pliability. To keep ice shoeing, the sled runner must be a stout plank placed on edge, as in the Peary and Eskimo sledges. These are rigid, and ice shoeing will stay on them indefinitely. It needs to be repaired every morning but that is only a few minutes' job with each sled. At fifty below zero the hauling weight of a sled so shod is probably only a quarter or fifth as much as with steel shoeing. The applying and repairing of ice shoeing is easy and has frequently been described. This shoeing has no serious disadvantage except that on a side hill the sledges are inclined to slide sidewise. In that respect ice shoeing is not much worse than German silver or copper, and one advantage of our steel shoeing is that it has sharp edges like a skate and when there is an inclination to slide it "bites" into the ice. When spring comes the ice shoeing melts off, but a sled can be made with steel shoeing underneath so that one has it to fall back on when the weather gets warm.

With a strong wind, low temperature will result also in frostbitten faces with the men and frozen flanks with the dogs. Although a facial frostbite is no more serious than sunburn, the freezing of a dog's flanks may lead to a sore which incapacitates him for work.

Strong local winds were now blowing from the Raglan Range, and on the way up the west coast of Hecla Bay we had to remain in camp several days to prevent the dogs from freezing. Our reliable thermometers had long ago all been broken and the ones we had with us gave only approximate temperatures. The lowest recorded at any time was on the portage between Liddon Gulf and Hecla Bay, 62° below zero. This was probably at least five degrees too low and certainly not an extreme temperature when one remembers that the United States Weather Bureau has recorded a temperature of 68° below zero, corrected reading, from northeastern Montana. Indeed, I know of no arctic explorer who has recorded temperatures as low as are found within settled portions of the United States and not nearly as low as those of certain farming districts in Siberia.

Because this was perhaps our most uncomfortable winter trip, it may be interesting to compare as to comfort our traveling methods with those of some other explorers. I quote Nansen's "Farthest North," published in New York, 1897, Vol. II, pp. 145 ff:

> "As soon as Johansen had finished with the dogs . . . the sleeping-bags were spread out, the tent door carefully shut, and we crept into the bag to thaw our clothes. This was not very agreeable work. During the course of the day the damp exhalations of the body had little by little become condensed in our outer garments, which were now a mass of ice and transformed into complete suits of ice-armor. They were so hard and stiff that if we had only been able to get them off they could have stood by themselves, and they cracked audibly every time we moved. These clothes were so stiff that the arm of my coat actually rubbed deep sores in my wrists during our marches; one of these sores—the one on the right hand —got frost-bitten, the wound grew deeper and deeper, and nearly reached the bone. I tried to protect it with bandages, but not until late in the

summer did it heal, and I shall probably have the scar for life. When we got into our sleeping-bags in the evening our clothes began to thaw slowly, and on this process a considerable amount of physical heat was expended. We packed ourselves tight into the bag, and lay with our teeth chattering for an hour, or an hour and a half, before we became aware of a little of the warmth in our bodies which we so sorely needed. At last our clothes became wet and pliant, only to freeze again a few minutes after we had turned out of the bag in the morning. There was no question of getting these clothes dried on the journey so long as the cold lasted, as more and more moisture from the body collected in them."

On page 175: "The tent up, and Johansen attending to the dogs, I crept into the bag; but lying thawing in this frozen receptacle, with frozen clothes and shoes, and simultaneously working out an observation and looking up logarithms, with tender, frost-bitten fingers, is not pleasurable, even if the temperature be only 22° Fahr. below zero."

Much more of the same kind could be quoted, but the picture of discomfort is already clear—the typical picture of the supposedly necessary experiences of an arctic explorer as it has found its way into polar literature and into people's minds.

As I have remarked elsewhere, there has not been a frostbitten finger or toe in any party with which I have been connected during any but the first of my ten years north of the arctic circle, so we know the experience of "working out an observation and looking up logarithms with tender, frost-bitten fingers" only through reading.

Nansen points out that during the day hoar frost gathers in the clothing and melts in the evening either in the warmth of the camp itself or, as with him, after crawling into the sleeping-bag. So far as I know, this condensation of hoar frost cannot be entirely prevented. Most of us are familiar with perspiration only in a liquid form, but it is well known to physiologists, and can be easily demonstrated when the weather is cold, that moisture is passing out of most or all parts of the body at all times so long as the individual is alive. If in calm weather at fifty below zero you hold out your bare hand, a wisp of steam will be seen rising from every finger, even though the hand may appear to be exceptionally dry and cold almost to the verge of freezing.

This vapor, invisible at ordinary temperatures, is continually passing out from the body and out through the underwear. But if the climate is cold, the dew point or point of condensation is reached in the second or third layer of clothing where the cold from the outside meets the warm "steam" and turns it into hoar frost. If only two layers of clothing are worn, it may be that the dew point is reached outside of the second layer and that all the hoar frost will gather on the outside of the outer garments, where most of it can be brushed off. But if this be so at twenty below zero, for instance, it will not be so twenty or thirty degrees lower, and the condensation which may in the forenoon be forming on the outer side of the outer garment may in the afternoon, if the temperature has dropped, begin to form between the two layers. Then in the comparative warmth of even such a cold camp as Nansen's, where the temperature was twenty or thirty degrees below zero, some of this hoar frost will melt, for the point of condensation will be farther from the skin than it was out of doors. Nansen would have become damp sitting in his tent even without getting into his sleeping-bag. But in the sleeping-bag the hoar frost turned into liquid and he practically slept in an ice-water bath all night.

But although condensation in one's clothing cannot be prevented it can be easily dealt with. There are many ways of doing it, of which we think this is the best:

Preferably I begin with a complete suit of underwear, including socks, of young caribou, with the hair next the skin. Outside of the fur undersocks I wear two or three pairs of blanket slippers, and outside of them a loose boot with canvas upper and sealskin sole very much of the type first designed, so far as I know, by McClintock. I have tried the elaborate felt and other boots used by the recent British antarctic expeditions and have found none of them so suitable as the McClintock boot, which is for extreme cold weather one of the few improvements known to me on Eskimo clothing. My reason for wearing several layers of duffle slippers is one of ease of making and mending. The same results could be obtained with several thicknesses of skin slippers as worn by the Copper Eskimos (of the mainland and islands around Coronation Gulf).

Outside my fur drawers I have worn ordinary cheap trousers and outside of them several pairs of loose trousers, similar in cut to those worn by Chinamen. These have been made of light drilling. If the weather gets warm I take off one, two, or three of these and spread them on the sled. If the wind blows or the temperature drops I put them on again one by one till I have enough. On the upper part of the body I wear a fur shirt with the hair in, and a somewhat heavier fur coat with the hair out. Outside of this is a coat of linen-duster effect except that it is cut in the Eskimo style. This is made of light drilling but may be made of heavier material, such as light khaki. I have found very dense fabrics such as Burberry, unexcelled though they are for certain purposes, undesirable for snow shirts, for the very denseness of fiber causes hoar frost to form on the inside of Burberry that would form outside of drilling or khaki.

Some of my men wore knitted woolen caps underneath a fur hood, but personally I have never done this. I have found it especially inadvisable to have a hood that fits closely about the face, for if the edge of the hood comes too near the mouth or nose, the breath will get to it before the point of condensation is reached and will form as ice. But if the hood comes only well over the ears, the distance from the nostrils is great enough so that the breath is condensed before it reaches it and settles on it in the form of light hoar frost that can be easily brushed off. All Eskimos recognize this fact although they do not understand the principle, and their hoods never fit closely around the face. It is characteristic with white men who live among Eskimos to introduce an "improvement" in a snug-fitting hood, but if these men are out in cold weather they often freeze a circle on their face corresponding to the lining of ice that eventually forms on the hood. Any kind of hood, no matter how "snug," is all right for a person who is outdoors only a few hours and who can get into a roadhouse at night, as do the Alaska travelers, where clothes can be dried out. But a man who has to wear his coat day after day finds this snug hood troublesome.

Whether the clothing is as just described or merely the double fur suit of the Eskimos, it is warm enough so that the air in contact with the skin inside of the underwear may be said to be at tropical heat at all times. In consequence, a properly outfitted arctic traveler suffers less from cold than do the inhabitants of such countries as Scotland or Norway, who dress in porous clothing giving the wind a chance to reach the skin and lower the body temperature.

The late Archdeacon Hudson Stuck had a gift for terse expression well known to the readers of his delightful books about Alaskan travel and to those who have heard him lecture. He was stationed for many years at Fort Yukon, three or four miles north of the arctic circle in Alaska. It is a wooded country and free from the strong winds that are our greatest handicap in the open, but, so far as mere cold is concerned, the Archdeacon experienced more of it than I or any polar explorer known to me. The United States

Weather Bureau has records of sixty-eight degrees below zero from Fort Yukon, which is probably about eight or ten degrees lower than I have ever seen it, although I may have experienced such temperatures without knowing it north of Great Bear Lake in 1911 when I had no thermometer. The Archdeacon and I met in New York in 1919 and were comparing notes about our experience with the inquiring public who always know how dreadfully cold it is in the North and marvel that any one can live through it. He said that the inquiry which he found most tedious usually took the form, "How *can* you stand the dreadful cold up there?" Most of his inquirers were women and he had devised the stereotyped reply, "Madam, we do not endure the cold; we protect ourselves from it." There it is in a nutshell.

But coming back to Nansen and our method of dealing with the hoar frost that forms in our clothing. His trouble lay in the fact that he took the clothes with him into the tent and, worse yet, into his sleeping-bag. Instead of pitching a tent when the weather is cold, we build, by the method already described, a snowhouse of such size as is required for our party. Then the fire is lighted. The temperature now is whatever it is outdoors, perhaps fifty below zero. The stove burns on a platform that is only a little lower than the bed, and the man who is going to do the cooking stands with all his clothing on down in the low place in front. Just as soon as the air begins to warm up a little, he sheds his snow shirt and presently his outer coat, being sure to do this before one particle of moisture has yet melted through the rise of temperature in the house. Then he takes off as many pairs of his light drilling trousers as have hoar frost in them, commonly stripping to his fur underwear. Similarly, as many pairs of duffle slippers are taken off as show hoar frost. Then he climbs on the sleeping platform, dressed lightly in his underwear every garment of which is entirely free from hoar frost. The outer garments are thrown out in the alleyway where they remain without thawing.

The rest of the men are occupied in feeding the dogs and getting everything outdoors snug for the night. By the time they are ready to come in, the house is comfortably warm. They do not come in with their outer hoar frosted garments at all, but undress in the alleyway and come in with only their underwear on. Of course, this underwear is fur, and is a good deal warmer than B.V.D.'s.

Thus we have completely disposed of the problem of keeping our clothing dry. But if through any accident clothes should get wet, they can be dried by being hung up in the snowhouse or preferably by being worn in the house so that the heat of the body can cooperate with the heat generated by the stove for rapid drying. Occasionally I have rolled my sleeping-bag against the snow wall in the night, getting part of it wet. All I have to do then is to see that the wet side is uppermost when next I sleep in it and in a night or two it will be dry.

On the trip of this spring we occasionally had to build houses of snow that was granular and to a degree porous. It happened, therefore, several times that it froze in our houses at night, though I do not think that the temperature ever went as low as zero. Still, it was our most uncomfortable trip and in that connection we used to discuss which we disliked more, the extreme heat we had experienced in various places or this extreme cold. Most of the men agreed that a temperature of anything above ninety in the shade constitutes the greater hardship. From heat there has been devised as yet no escape, but one suffers from cold only through defect in one's clothing, housing, or heating system.

# CHAPTER LVIII

## SPRING TRAVEL, 1917

BY the time we got to Grassy it became apparent that the additional men and dogs brought by Captain Gonzales were eating more of our dried meat than their help was worth. For reasons I shall not go into, it appeared to me then that I could not solve the difficulty by merely sending them back, and was compelled instead to delay a week for the killing of additional ovibos which, unfortunately, we did not find very near the camp. The weather conditions also were exceptionally bad. We had blizzards so thick that you could not see over half a mile, accompanied by temperature in the vicinity of fifty below zero. This is far the worst winter weather I ever saw in the Arctic and was doubtless local, the wind being caused by the high land of the Raglan Range to the south.

While we were getting the ovibos, I sent out an advance party towards the new land, consisting of Castel in command, Charlie, Knight, Noice, and Pikalu, with twenty-seven dogs and three sleds. They were to go to the south coast of Borden Island (First Land), pick up a depot already landed by Castel and proceed east and north, improving the survey of the coast which we had done poorly the previous fall on account of bad weather. They were to follow the east coast northward till it began to trend well west of north, when they were to leave it and wait for us at the edge of the shore floe, which we expected would be fifteen or twenty miles from land in this quarter.

As soon as the ovibos had been killed the rest of us followed, camping in the snowhouses they had left for us but making slow progress, for the weather continued extreme and the sleds dragged heavily.

That when I have been cold in the North it has been my own fault, is illustrated by a diary entry of March 30th, the day we reached Cape Mackay: "Started 12:40 P. M., reached land and found Castel's trail about 11 P. M., distance twenty-eight miles NNE . . . Weather very cold, minus fifty-four degrees Fahr., and

Natkusiak and His Favorite Big Dog.

Wilkins Tried to Use a Mask against the Cold.

Emiu was Fond of Small, Fast Dogs.

a fifteen-mile breeze from the southeast most of the day. After reaching land a fifteen-mile breeze from the northeast. I wore only a single thin deerskin shirt with drill snow shirt outside, and a single pair of woolen mittens, and got about as cold as I have ever been. The other clothes were deep in the sled (because it had seemed warm in the morning) and I did not want to stop to get them out, as I knew we would find a snowhouse ready for us. My hands got too cold to thaw my face properly. Froze both cheeks, chin, and throat. Emiu froze his face about as much as I did, and one wrist in addition. All others froze faces more or less, Natkusiak pretty badly. No frostbites serious. My left hand, from the cold, I suppose, was swollen so that the knuckles appeared as depressions when I clinched my hand last night. Now (noon, March 31st) it is still swollen but not so much. Emiu's and Natkusiak's wrists are also swollen and so is my right hand, but less. (All of us who suffered did so because of not wanting to stop to put on clothing that we had put into the loads in the morning.) Others wore heavy outer clothing and were not even cold. Some of the dogs were slightly frostbitten."

So far as the cold is concerned this is probably the most serious record of it in any of my diaries, and though it may sound unpleasant to one who has never tried it, the fact is that none of us minded it this time any more than people mind an uncomfortably hot day in the South. A straightforward account of cold weather sounds dreadful to Southerners; a straightforward account of heat sounds dreadful to Far Northerners.

On April 5th I sent back Illun, Pikalu and Ulipsinna with two sleds and twenty-nine dogs. It was a novelty to me and good fun to travel with such a large party as we had had up to this time. When all our teams were together it was really like one of the arctic expeditions you read about. At Grassy the returning party were to pick up Alingnak and the women of Natkusiak's camp and carry them south to Liddon Gulf. Two days later we had caught up to Castel's advance party and were all gathered together at the floe edge. Weather conditions were not propitious for sealing and we secured only two.

So far on our expedition the outlook had often been bad but the event had never turned out quite as badly as we feared. I have seldom been so cheerful over the prospects of a coming year as I was the autumn of 1916 on the return to Melville Island where I found everything had been so admirably done by Storkerson and where fortune had seconded forethought at every turn. But the winter had brought misfortunes, and delays and difficulties continued, so that it was only on April 12th that we finally got out on the moving ice, when our expectations had been for a month earlier.

We had never left land at so high a latitude before and we never had found the ice so stable and favorable. It was not level, and rapid progress was impossible, but it had little of the danger and uncertainty of the thinner and more mobile ice where the currents are strong, as around Banks Island or Alaska. For the first few days we saw plenty of signs of seals but did not stop to hunt them. We took frequent soundings, for the character of the bottom was remarkably interesting. At the shore floe fifteen or twenty miles from land we got a sounding of four hundred and sixty-eight meters. After two days of travel, when we were eighteen miles farther from land, we got four hundred and fifty-two meters; ten miles farther on four hundred and forty-four meters. The bottom we were traveling over was therefore similar to that of an enclosed sea, as we knew from theory and found later when we ran a line of soundings across Melville Sound between Melville and Victoria Islands. This fell in with the theories of Greely, Harris and others that there ought to be land to the northwest, and with Peary's report of having seen "Crocker Land" in that direction.

Before we left the shore floe Charlie had complained of illness. On getting up suddenly he felt dizzy and sometimes collapsed. In general he was disinclined to all exertion, depressed with all sorts of gloomy forebodings, and his strength was noticeably less. These were the symptoms of scurvy and I asked to see his teeth and gums. The gums were swollen and purple and the teeth were slightly loose. There was a dull ache in the arch of the teeth and the gums bled readily. This was almost conclusive, but I did not see how it could be with the diet we had been having. When I said to him that with fresh meat every day scurvy was impossible, I really meant to inquire whether he had been following the directions to eat fresh meat, and I took his reply of "Yes, sir," as indicating that he had been doing so and that the mouth trouble was probably pyorrhea. As we advanced he became weaker and more depressed every day, so that it became necessary to send him back. There were reasons for sending the support party back soon, although not quite this soon. I wanted Storkerson to complete the survey of Victoria Island if he could.

The party that turned back on April 16th had several important things to do. We feared from the report brought by Captain

Gonzales that Thomsen had made a sledge journey towards Melville Island the previous winter and had got into difficulties. Castel was to travel with Storkerson's party only as far as Cape Ross, and was then to cut across to Mercy Bay in a search for news of Thomsen. Charlie would go with him if he was well enough,—otherwise Storkerson would find him some other companion. Castel's party would visit our depot at Mercy Bay where they would probably find traces of Thomsen. They would then follow the coast west and south to Kellett, looking for information of all sorts. Captain Bernard had my instructions not to leave the Kellett base, and I expected Castel would find him there. He was to place himself under the Captain's orders and coöperate in repairing and launching the *Sachs.* Once launched they were to take her into a good harbor which lies two or three miles east of the Kellett base and wait there until late in the summer. When the season had advanced to where Captain Bernard considered that there was barely time left for getting her out (probably about August twenty-fifth), she was to sail for Herschel Island and Nome, reporting thence by cable to the Government at Ottawa, for I did not want her to spend another winter in the Arctic. Failing news of us, they were to leave a depot of certain specified things behind at Kellett.

To relaunch the *Star* would probably, I thought, cost the Government more than she was worth. If I sent a party of men there to stay by for launching her in case of a favorable season, the ice conditions might prove wrong and they be compelled to spend an additional winter. The value of the ship would not repay the wages and trouble. But Natkusiak and some of the other Eskimos who had been working for us were very anxious to buy her and had coming from the expedition enough wages to give the Government what I considered the ship to be worth in her present condition and location. It was therefore arranged that Natkusiak should become the owner of the *Star.* He and his party would travel with Castel if they could, or follow him if he traveled too rapidly for them. They would spend the summer at the *Star,* and if ice conditions were favorable would launch her and come south to Kellett, although it was equally likely they would spend the winter at Cape Alfred, for that region has good trapping opportunities and is in many ways attractive to the modern half-civilized Eskimo.

Instructions to Gonzales and Storkerson may be summarized together, for they overlapped. With the exception of Natkusiak's and Castel's parties, the members of our expedition would proceed from Melville Island to the *Bear*. Gonzales would then place at Storkerson's disposal men and equipment for the survey of the northeast coast of Victoria Island and assist to that end. Storkerson would proceed by whatever route he chose to the district to be surveyed and would finish it if he could and make his way back to the *Bear*, probably overland, either direct or by sled to Collinson Inlet and then overland with pack dogs to Walker Bay. The *Bear* was then to proceed to Kellett and assist if necessary in the launching of the *Sachs*. If Captain Bernard should have been unable to launch the *Sachs* he and his party were to embark on the *Bear* and the entire expedition should sail for Nome.

So far as my sledge party was concerned, the assumption back of these instructions was that if we were unable to reach Cape Kellett before the end of the summer when it became imperative to sail for a vessel that wanted to get out that year, we would look after ourselves and get out somehow. There were various methods of doing this and my mind was still open to the choice. It was possible we would go east to Ellesmere Land, spend the summer and early winter there, crossing to Greenland and traveling south along the Greenland coast by sledge, connecting with the Danish trading vessels the following year. More probably we would come south through Byam Martin Channel to the north coast of Victoria Island, spend the summer there, cross in the fall by sled to Bernard Harbor and go home by way of Bear Lake and the Mackenzie River. A third possibility was that we might find some land upon which we would spend a year or might even decide to spend a year on the ice. Of these secondary alternatives the last was the most attractive to me. But of course we would try to reach Kellett before the close of the season and I considered the chances better than two in three that we should be there before the 20th of August, an appropriate sailing date for a ship having no other task than to get out to Bering Straits as directly as possible.

The advance party now consisted of Noice, Knight, Emiu and myself with two teams. We made fair progress but never fast, for we had been driving the dogs rather hard for a long time and they were a bit tired. The going was heavy also and not so much easier as it was safer. The general advantage was that we had on this sluggish-moving ice a feeling of the stability of all our surroundings unknown to us when traveling in the vicinity of Alaska.

As we advanced on the ice the soundings became deeper and deeper until about a hundred miles from land we had five hundred and twenty-two meters. Then they began to shallow very gradually till forty miles farther on we had four hundred and ninety-six. How we interpreted all the signs is seen from a part of a diary entry for April 25th: "Land is probably ahead, for so it seems to all of us from the signs, but that very fact keeps the ice from moving and we find no open water for sealing and so can get no dog feed by that way. I haven't the time to record all the facts and reasons now but shall do so if we get seals and thus some spare time."

We were now in an area of the sort I had always expected to find some time, although this was our first experience. This was one of the sea deserts I have already described. It may have been because of land to the northwest, as we thought, or only the result of winds and currents, that we had here an area where the ice was evidently under restraint as firm as the stresses were heavy. I have seldom seen such evidence of pressure and never far from land. The ice was on the average the heaviest I have ever seen and there is no doubt that seventy-five per cent. of it was many years old. But even ice averaging in thickness twenty and thirty feet had been crushed up into ridges which, although not huge as compared to the miniature mountains that may be built out of six and eight-foot ice near land, were still far bigger than any pressure ridges we had seen made out of old ice far at sea. The men thought some of them were a hundred feet high. We never measured them but it is safe to say that they were over fifty.

This ocean ice had not been moving much for months, if not years. While we were out on it we had severe and various gales, but these never caused a movement of more than a few miles, no more movement, indeed, than might have been caused had we been near the center of an enclosed sea where the lands ahead were as far away as the ones behind. For even where there is no open water for the ice to drift into, the cake that you are on may in a gale edge nearer and nearer to land by the crumpling of the ice between it and shore.

In summer there had not been much open water here and seals are found in numbers in winter only under such ice as represents the water of the preceding season. As I have emphasized elsewhere, these sea deserts do not have any necessary relation to latitude. Heavy ice and absence of seals are merely evidence of the area being an eddy caused by lands or winds or whatnot.

I was a little concerned, not knowing the size of this area, as to how soon we could get across it. But what concerned me more was the illness of two out of the four of us, Noice and Knight.

At first I did not recognize the illness but noted merely a sluggishness and quarrelsomeness which was entirely foreign to Noice, at any rate, whom I knew from the previous year. They complained of numerous things, including the vanity of polar exploration and the general foolishness of doing hard work to no purpose. Later they came to me with a definite complaint that the food, the amount of which I had set when I realized we were in a sea desert, might be enough in quantity but there was something wrong with the quality, for they had never felt so "rotten" before.

Now I questioned them closely about the previous winter, whereupon I learned the facts which made clear the condition that had been so mysterious in Charlie's case. It was scurvy that he had and these men were getting it, too, and with good cause.

It seems that when the dilapidated sledges went to Winter Harbor the men agreed among themselves that while living on meat was all right when you had to, there was no need to do so now. They considered entirely unreasonable my order that they were to eat ovibos meat every day irrespective of what other food they had, and their resentment carried them to the other extreme. They confessed that "just for spite" they sometimes refrained from eating meat when they would really have preferred it. The dietetic regulation had been carried out in about the spirit of schoolboys who do things for no other reason than that they have been told they must not do them.

On approaching Winter Harbor the party had seen a large herd of ovibos and when Storkerson had wanted it killed, they begged off on the ground that there was plenty of pork and other things in Bernier's cache. While repairing the sleds they had lived on the Bernier groceries and had even fed the dogs with them, so that when they were ready to leave they had lowered the supply to the point where they could haul almost all the remainder with them and this they did. We had traveled northward from Liddon Gulf in two parties, with Charlie and Noice members of the one where I was not. On this section they had eaten nothing but groceries and a little dried ovibos meat, which probably has no antiscorbutic value, anyway. By the time I caught up to them at the floe edge they had been three months on this diet, which is long enough to bring on scurvy, as experience has repeatedly shown.

If Charlie had told me these facts I should have diagnosed his case directly. Now there was no doubt about Noice, who was a good deal worse than Knight, for Knight had been eating a certain amount of fresh meat and fish on the *Bear*. On the way north with Gonzales, Knight had lived entirely on groceries and since joining me he had lived in the main on groceries and dried meat. It was reasonable to suppose that his ailment was the same as that of Noice.

Under the belief that the pemmican found at Winter Harbor was a more condensed food than the dried meat, Castel's party had been eating dried meat and saving pemmican. For similar reasons we now found ourselves with nothing on hand that had any antiscorbutic properties. The seals killed at the shore lead would have cured three men of scurvy many times over, providing the meat had been eaten raw or underdone, but (not suspecting that scurvy was pending) I had had them fed to the dogs because the groceries and dried meat were more portable.

It was before I diagnosed the cases of Noice and Knight as actual scurvy that on April 26th [1917] I made up my mind to turn back, although I did so on the basis of their evident indisposition which seemed serious when taken together with the lack of seals. When I realized the disease was scurvy, which was the same evening, I saw that the situation was serious. The nearest land was Cape Isachsen, some one hundred and twenty-five miles away, where the shore floe promised seals whenever the weather was suitable, and where caribou were to be expected on the land. It was six or seven hundred miles to our base at Kellett or to the Eskimos of Victoria Island, although that consideration is really not material, for it was unthinkable that one could go so far before stopping to get the men well.

At first we thought we might be able to follow our trail towards Borden Island and that the ease of doing so would make up for its greater distance, but at the end of two days we found keeping the trail to be impossible, not because we could not find it (for there had not been a great deal of ice movement) but because there had been so much pressure that heavy ridges or open water lay across it, compelling us to go several miles to one side, with the result that we lost too much time.

We now made up our minds to strike for Isachsen and made steady progress towards it, although a little slower each day as the disease developed and the men weakened. The weather was very bad for sealing, thick and blizzards. One seal was seen and fired at by Noice but not secured. Some days brought special difficulties. May 4th, for instance, we spent eight hours of hard work in cutting loose a corner of ice to make a raft for ferrying across a lead, and were defeated at the end by ice movement and forced to remain in camp.* Ice movement during the night allowed us to proceed in the morning and for some time we had only the ordinary obstacles of rough ice.

Noice was eventually compelled to ride all the time except when we came to a pressure ridge where we had to make a road with pickaxes. Here he would walk a little, although I think not more than one or two hundred yards at a time. By May 10th when we got to the shore lead Knight's disease had developed so that, although he had not been forced to ride, he was no longer able to be of material help. Still, he certainly did his best, and it was admirable what fortitude both he and Noice showed and how hard they tried to be of use.

At the shore lead we found a new pressure ridge through which it took us several hours to make a road with pickaxes. A few days before, this would have been all level, young ice two or three miles in width that was now a conglomerate of broken fragments several hundred yards across. That level ice would have given us good sealing, but there would be none now until the wind changed and the water opened. The only thing to do was to go ashore and look for caribou.

May 11th we reached land after traveling six hours over the shore floe. The teams then proceeded another six miles along shore while I hunted overland. So far as I recall, I did not see a single blade of grass and the district struck me as the most barren I had ever entered. There was not a track or trace of anything for food, and it was a little hard to be cheerful that evening. Noice could not walk, Knight apparently would not be able to walk more than one or two days more, the dogs were getting more tired every day, for latterly their food had been insufficient. We had left for ourselves food for six days at half rations, which was really food for three days. The dogs had food for about the same length of time, consisting, however, entirely of wornout boots and other skin clothing. It has often happened before that we had to feed skin clothes to the dogs; in fact we recognize it as one of the advantages of skins over woolens that they can be eaten in emergencies. With fuel to cook them, skins are not disagreeable unless one has too much imagination, for they are merely tasteless—insipid is the least complimentary term they deserve, if they have no hair on them.

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* We did not use our sled-boat because its canvas cover was now nearly worn out.

The next day the program was the same. Emiu with the two sick men and the teams would follow the land from point to point and make as good a day as he could while I hunted overland. On crossing the first bay and landing beyond I immediately found abundant vegetation. Not long after that I saw old caribou tracks and presently some that were fresher, and within three or four hours after leaving camp I was on the nearly new trail of a band of about twenty. There was no wind so that it was not safe to follow this trail, for the animals might hear me. I hunted most carefully, going away from the locality where I supposed the caribou to be and examining it with the glasses from high hills two or three miles away. Eventually I saw them and made my approach.

It occurred to me when I saw some of the animals on top of a hill that they might have been seen from the sleds, and I hoped the men would have the self-control not to try to get them for themselves, for nothing is more likely to lead to failure than an unconcerted attempt by two or more men from different directions to get at a band of caribou. One man always hunts them better than two and the drawback of two hunting separately is greatly multiplied if they have no plan of coöperation. After I had devoted much of the day to the approach and had commenced shooting, I heard shots from above and behind me. Evidently this was Emiu, who could not hit very many from the distance from which he was shooting. Still he was doing no harm. Between us we killed the entire twenty-three.

When it was over he came and told me what was really an admirable story. They had seen the caribou from the ice five or six hours before and the sick men had urged him to go and try for them, saying that I might overlook them. He said he had been reluctant to go, knowing my views on the inadvisability of two men going after the same band, but as the others insisted, he went. But instead of going to look for the caribou he went to look for me. He eventually found me but could not get to me without going near the caribou, so he had to make a wide circle, with the result that he had been unable to catch up. During the last hour he had been crawling two or three hundred yards behind me, never daring to make enough noise to attract my attention and with the idea merely of keeping so far behind that he was sure he would not interfere with my success.

Knight and Noice had pitched camp out on the ice. We hurried out to them with merely some of the tongues which we cut out without stopping to do any skinning. These I knew would make a good beginning towards the cure, by cheering them up as well as by their curative properties. Tongues are tasteless raw and exceptionally palatable cooked, so that we had them underdone as a compromise—a little cooked for palatability, a little raw that they might have curative power. After the meal we moved inland and established what we called "Camp Hospital."

The sick men were now put upon the following diet: In the morning meat enough for a small meal was boiled and eaten slightly underdone. There was enough broth left over to furnish something to drink for the rest of the day, and any food eaten beyond the boiled breakfast had to be eaten raw. It is one of the characteristics of scurvy, as I have seen it, that the appetite is equal to normal if not greater, and there is no serious digestive disturbance until perhaps in the late stages when death is approaching. I could rely on the appetite of my patients, therefore, to lead them to the eating of plenty of raw meat. This was eaten by preference slightly frozen, at a hardness analogous to that of hard ice cream. No meat, as I have said, is ever tough if eaten raw.

The only trouble about our diet now was lack of fat. The marrow in the bones of these caribou was good and we let the sick men have nearly all of it. Then, after putting the camp in good shape and making sure that the invalids were able to take care of themselves, Emiu and I set off inland looking for fatter caribou. The ones we had killed were all calves, yearlings or cows and we were going to try to find bulls. I knew now it was only a matter of time till everything would be well, and was able to dismiss worry and to really enjoy the next two weeks.

We had more sunshine than is usual at this time of the year and, although the bulls were not found, the older cows were fat enough so that by reserving the marrow and suet for ourselves we had enough and it was only the dogs that suffered. They had their bellies full of lean meat continually and it was not so entirely lean as to make them sick, as I have known it to be on the Canadian and Alaskan mainland where caribou have been really lean. We examined the land, took observations to get a good rate on our watches, and altogether spent a pleasant and moderately profitable time. We verified what Castel had noted the previous year on his way south from Cape Isachsen, that Cape Isachsen does not lie on a peninsula as represented on the maps, but on a small island, for there is a strait running through between the Queen Louise Fjord and Deer Bay of Isachsen.

The men made such rapid recovery as to surprise me. When Emiu and I had been away two or three days and had secured the first lot of really excellent marrow bones, I sent him back with these and received a joint letter from Noice and Knight saying that they were now well enough to travel. Three or four days had eliminated one of the chief symptoms of scurvy, for they were now as cheerful as they had been gloomy. Their willingness to travel was, however, no more than an indication of a frame of mind, for I knew they would not for something like two weeks have the strength to walk ten miles a day. And so it proved, for when we started May 27th and made a ten-mile day, we could do so only by their riding alternately, each being able to walk about five miles. As we proceeded south their strength increased and in a week they did not need to ride at all. A month from our killing of the twenty-three caribou they were in perfect health with no sign of the disease left, except that their gums which had receded badly from the teeth had failed to regain the normal position.

Our course was direct for the northwest corner of Lougheed Island. We could travel with little meat and keep the sledges light for the convalescents, for the abundance of Lougheed Island had been revealed. The going was generally through fog, the sky was thinly clouded, and the light although diffused was of exceptional and continued brightness, so that we were delayed by snow-blindness. We reached Lougheed Island the last day of May and that day had the first trouble of the year with water on the ice. For the present this was confined to the vicinity of land. Lougheed Island was already more than half bare of snow, although the thaw had not commenced on the uniform whiteness of the sea ice.

We feared, as it proved wrongly, that the sealing might not be good between Lougheed Island and Melville Island nor the hunting on the northeastern peninsula of Melville Island. Accordingly, we took care now to load up the sledges with caribou meat. Part of the time we traveled overland for greater convenience in hunting. June 7th we saw the first new-born caribou calves. Contrary to the experience of the summer before, there were now many wolves on the island and the caribou were continually on the alert. It is not often that I shoot caribou at more than three hundred yards, but this time I shot several at ranges varying from four hundred and fifty to six hundred yards. This long-range shooting, especially with a moderate or strong breeze, gave a greatly increased percentage of misses, so that under these conditions we could not long have maintained our record of averaging more than a hundred pounds of meat to the cartridge. There was no reason now, unless it were pride, for trying to maintain that record, for we were on the homeward journey of the last exploratory trip and expected to reach Kellett easily in time for connecting with our ships which would get us out into the Pacific and home within three months.

Emiu had been off hunting the day before this and brought home his pack bag full of coal. He had found a vein of it in the side of a hill. The next day he went with Knight to investigate the find and to bring home a load, and they discovered what Knight described as a "hill of coal" a few hundred yards from Emiu's discovery vein. Knight said that but for the absence of any sign of a railroad one would think that the coal had been brought there and dumped in a heap from a trestle. We could not fancy what geological forces had brought together this heap of surface coal, but if its origin was a mystery, its utility was evident. We began at once to weave around it all sorts of romantic plans for future exploration. We could travel here with confidence from afar with one or two dog teams. We could kill caribou and seals in the summer, in the fall we could put up snowhouses and line them with caribou skins, we could burn coal during the winter, and in the spring we would have a base better by several hundred miles than any we had had for exploring the field that most interested us to the northwest.

For Noice and me it was exasperating to realize that this coal mine was no more than ten miles away from where we had spent the previous summer with nothing for fuel but the caribou fat which we would so much rather have used for food. We should probably have been no better off now for the feasts of a year ago, but with human illogicality in such matters we kept wishing and wishing again that we had known of this coal to boil our meat with. Now that I am farther removed from the scene I am rather glad we did not find it, for we learned how inconsiderable a hardship it is to be so sharply limited in fuel. I had always thought that an island in which there was practically nothing to burn would be an unpleasant place to spend the summer, but in looking back and talking it over we find that all of us have the most pleasant recollections of our stay in fuelless Lougheed Island in 1916. With fuel it would have been an arctic paradise.

With sledges loaded with caribou meat and coal we now went on to our former summer camp so as to "tie up" the observations of this year with those of last. This was especially important, for we intended to travel rapidly to Winter Harbor on Melville Island and take observations at Parry's Rock, the one spot among the Canadian arctic islands that has been really well located. These observations at Parry's Rock would give us a certainty for our longitudes which would otherwise be wanting.

"The unexpected always happens." It was the day we expected to arrive at the summer camp and I was following the coastline of which I knew every bend and bight. Now, when everything seemed plain sailing, I became careless because of that very fact and had an accident that came near being fatal.

Our dogs were not in the best of spirits on their lean meat diet, and when I saw a seal from the camp on June 11th I tried to get it. The diffused light was so bright that I could scarcely see the sights of the rifle and I missed it. A little later I saw another. There was no water visible on top of the ice which was perfectly level. By the auktok method I was able to get within about two hundred yards after an hour of approach, and fired. His head dropped, showing that he had been killed instantly. According to the diary: "I started to run out to him and fell in a tide crack full of slush. I fortunately sank to my knee in a fairly solid snowbank just before getting my other foot in the water. Sank to my belt on the right side, but the slush was just thick enough so that my body and arms did not go through, as my weight was on my left leg that was sticking in the snowbank. Was eventually able to get a hold in the snowbank and climb up. Had my left foot come loose, I suppose I should have been drowned. The slush was the consistency of quicksand. Had I not dropped my rifle before starting to run, I should have lost it.

"After getting out of the water I saw the seal had disappeared into his hole—slid in, as often happens. This would ordinarily have meant the loss of the animal, but he must have been exceptionally fat for I found him floating in the hole when I got there. The teams had started when I missed my first seal and were now half a mile offshore and half a mile ahead of me, waiting for Emiu who had gone after a seal he saw ahead—he failed to get it. Dragged my seal out to the teams, tied it behind the big dogs and we got to our summer camp of 1916 at 12 o'clock, noon. Distance ten or eleven miles."

With our observations for time taken, we left Lougheed Island June 13th, traveling south so as to pass ten or fifteen miles west of the northwest corner of Bathurst Island, aiming to strike Melville Island near Bradford Point. The wind was blowing strong from the north and helped us along. We were carrying skis, partly for possible use in the early spring when crusted snow overlies water that fills all the low places of the ice, although they were mainly of value as part of the frame of our sled-boat. I now put them on and found I could almost sail along before the strong wind, and the sleds were speeded so that the men could ride as much as they liked and we made excellent progress—twenty-seven miles in seven or eight hours. As yet there was no water on the ice after the land lay a mile behind.

Many of the birds that intended to inhabit Lougheed Island had already arrived and relays of others kept flying over us northward. Tracks in the snow soon showed that we had once again come into bear country. In two days we received a visit. We had gone to sleep with a rifle lying at the tent door, as always. I was awakened by the barking of the dogs, stuck my head out and saw a bear coming at a gallop towards Emiu's team, which were strung out at six-foot intervals along a forty-foot rope. We could see from the snow later that the bear had been following our trail, and it seemed plain that when he was about a hundred and fifty yards off he saw the sleeping dogs and took them for seals basking along a tide crack. Apparently his opinion was not easily changed, for the dogs were tugging against their tie ropes and barking loudly, behaving as no seal ever did, and still he was running towards them as hard as ever. He was not much over fifty yards from them when I saw him, and about twenty-five yards when, half-blinded by the glare of the snow after the dark tent, I fired. The bullet struck in the shoulder, breaking the bone. The bear's momentum was so great that he turned a somersault and rolled more than half of the remaining distance towards the dogs. A second shot went only an inch or two from the heart but the bullet did not expand and he ran off on three legs. It had been one of the mishaps of the spring which I have neglected to mention that cur expanding-bullet cartridges were most of them left behind, steel-point ones having been substituted by mistake. We had filed the points off these so as to convert them into a sort of expanding bullet, but this did not always work. But it was only three or four hundred yards the bear was able to go before he had lost so much blood that he collapsed.

# CHAPTER LIX

## IN THE FOOTSTEPS OF EARLIER EXPLORERS

As usual when we crossed from one land to another we ran a line of soundings from Lougheed Island towards Melville Island. Ordinarily these are taken through the breathing holes of seals. The ice here, rather to our surprise, was in considerable part of this year's origin, and we formed the opinion eventually that Byam Martin Channel is probably open nearly every year. In the narrow part near Bradford Point the ice was already in motion, although slight, because it had not yet broken up. We have never seen seals more numerous to the square mile of ice nor bear tracks thicker. The tracks crisscrossed in every direction and in some places there were paths and roads made by numbers of them either traveling together or following each other's trails.

Following south from Bradford Point we kept a sharp lookout for beacons on the land and found one. Here we spent several hours digging around, hoping for a cylinder buried "ten feet true north" according to the rules of the Franklin Search, but found nothing. In general the land is rather rugged and because of the rocks there appeared to be less vegetation to the square mile than in Lougheed Island. There were frequent traces of caribou and we saw several bands, and cattle were also seen here and there, although not as many as around Liddon Gulf. Considering the abundance of seals and bears and the presence of land game, this may be considered a hunter's paradise. If the hunting is as good in the fall as in the spring, three or four hunters could easily support a party of forty or fifty men throughout the year.

The coal was gone and we were burning seal blubber. One day for an experiment we cooked with ovibos hair and wool. It had been raining and the hides were damp, nevertheless we had no trouble in boiling the pot holding about eight quarts of water with the hair and wool of one skin. In dry weather we could probably have cooked two or three pots to each hide.

Near the southeast coast of Melville Island on June 23rd I saw what was new to me in animal behavior. Three big caribou bulls were feeding quietly and near them were eight yearlings. When I was half a mile away and my head was showing above a ridge, several of the yearlings started on a sudden run. At first I thought they had seen me, though that was really not possible, and when I looked at them through the binoculars I saw they were chasing a fox. Three or four of the yearlings chased it for two or three hundred yards and then returned to where the rest were feeding. The fox now waited a little, as if to see if the caribou had given up the game, and then ran in among them again and was chased by others. Sometimes the fox dodged in and out among them and when it had secured the interest of the yearlings and induced them to the chase, it would run around the three old bulls using them as a sort of protection from the yearlings. The old bulls paid not the slightest attention to either fox or yearlings and went on feeding quietly. I watched the game about half an hour, after which I mounted the ridge and approached till they saw me. The first to see me were the old bulls which ran off at full speed. They had perhaps a hundred-yard start over the young bulls which were, however, so much fleeter that they caught up and passed the old bulls within half a mile. I have seldom seen caribou run so far without stopping, but these must have run nearly a mile. After two or three stops the yearlings came back and approached within fifty yards of me several times. All ran with their mouths open, though chiefly at a trot after the first mile sprint. The big bulls kept their course for two or three miles and then commenced feeding.

A beacon near the southeast corner of Melville Island I came upon on June 25th, about half a mile inland and a hundred feet above sea level. The monument had a total height of four or five feet, of which the base, about two feet, was a big rock, and in a crevice of the rock was a common fruit jar containing the following record:

RECORD
from
C. G. S. "ARCTIC"

"Know all men that on this date, 16th August, 1909, the Canadian Government Steamer Arctic passed here bound for Pond's Inlet.

*"Remarks:* We anchored here on the 15th instant on account of the Byam Martin Channel being full of heavy ice. We wintered at Winter Harbor. Left 12th August. Ice just gone. We all well on board.

"J. E. BERNIER,
Commanding Officer."

In the jar along with this record was a newspaper cutting devoted to an account of the outfitting of Captain Bernier's expedition. This was from some Montreal or Quebec paper and the date was probably about May 13, 1908, for that day is mentioned in the article as roughly contemporary with the writing of it. On the back happened to be another news item. It was a telegraphic despatch from England quoting Sir Edward Grey as saying in Parliament that "an entente between England and Russia would make it practically impossible for any other European powers to go to war with each other." This was interesting reading in June, 1917.

We were now in the regular sailing waters which we should have traversed eastward through Barrow Strait and Lancaster Sound to the Atlantic had the *Bear* come to Melville Island the previous summer. On the map this looks like a roundabout and long route, but experience has proved it to be one of the easiest in the Arctic. Even in the old days of sailing ships, few had any great difficulty in getting in to Melville Island or out again. Even one which was abandoned in Melville Sound under circumstances for which the commanding officer has been greatly criticized, drifted safely, though there was no one to guide or take care, and was picked up in fair condition by an American whaler in Baffin Bay the following year. This was one of two ships abandoned under a policy of mistaken caution, and the other one is the only ship, so far as I know, that has been lost in these waters.

Reflections passed often among us of how pleasant it would have been to know that the *Bear* was waiting for us at Dealy Island or Winter Harbor. Summer had come and there was no doubt that the journey across Melville Sound to Banks Island where we had to go as one result of the *Bear's* not coming to us, would be exceedingly unpleasant through the deep water and slush.

These considerations appealed to Knight with particular force, for the stories he had heard of wading through ice water made the prospect even more forbidding to him than it did to the rest of us. So often a description of "hardship" is more impressive than the experience itself. It is those who have never fasted who are afraid of being hungry, and those who have never frozen their faces who are in the greatest dread of doing so. His thoughts eventually loosened Knight's tongue as to various things he had hitherto kept partly or wholly secret, and he gave us now at last the full story of what had happened the previous summer on the *Polar Bear*.

It seemed that on the *Bear* it was generally understood that Storkerson and I were benighted persons who were bent upon living like savages up in Melville Island. The rest of our people, even the Eskimos, were supposed to be held by us in Melville Island largely against their wills, and the work that we were doing there and to the north was said to be of no account, anyway, for nobody was interested in finding out whether there were more or less islands in that quarter. It had been decided after Wilkins left for the south and Storkerson for the north that the *Bear* would make no real attempt to get to us in Melville Island although she would make a pretense of doing so. So clear were the plans of not going north, no matter if ice were entirely absent from the straits, that at the time she made her alleged attempt to get north a hunting party was left behind in Deans Dundas Bay to put up caribou meat to be ready when she should return.

Knight had begun to drop some hints of the real situation to Storkerson while we were on Melville Island but Storkerson did not understand fully then; and still less did I, for he did not tell me everything he learned from Knight. But during our spring journey Knight's mind had undergone a gradual change. On the ship he had allowed himself to be talked into half-sympathy with the malcontents, but now through his association with us he began gradually to appreciate the interest and adventure of the work we were doing and was now even ready to believe in its importance. He had also become a convert to the practicability of living off the country and was beginning to enjoy it. But our boots were getting worn out and every time his feet got wet he became more depressed at the thought of having to wade across Melville Sound and more resentful at the *Bear* for not being on the north side of it, as he now began to hint she could easily have been. Eventually he felt inspired to give the full story, which he did about as follows:

The majority on the *Bear* came to the conclusion shortly after Wilkins left (in May, 1916) that I had no business to order her upon so dangerous an undertaking as the trip to Melville Island and that her party were justified in disobeying. It was further said that they had heard from Bernard Harbor that the Government had approved of Dr. Anderson's refusal to follow instructions of mine in 1914. (How such a rumor could have originated is a mystery, for Wilkins and Castel, the only arrivals from Bernard Harbor, denied having brought any such information.) During midsummer a depot of supplies had been landed on the east shore of Prince of Wales Strait opposite the Princess Royal Islands, under guardianship of Jim Fiji and some Eskimos, and some time after that the *Bear* steamed south a hundred miles against a head wind much of the way, and anchored in Walker Bay more than a month before the end of the ordinary season of navigation. From a high lookout hill back of his depot after the ship sailed south Jim Fiji watched the straits and reported that in a day or two what little ice there was disappeared and that he never saw any more the rest of the summer—five or six weeks at least. This Knight had on hearsay from Jim, but he knew personally that no ice had been in sight from anywhere near Walker Bay for more than a month after they anchored, and the season was unusually warm.

Confirmatory news as to the unusual favorableness of the season came from Crawford's ship. They had been anxious to get in touch with the *Bear*. About the same time that the *Bear* went into winter quarters the *Challenge* had left Bering Straits. She came east along the north coast of Alaska, past Herschel Island and Cape Bathurst and up into Prince of Wales Straits, knowing that the *Bear* had wintered near Armstrong Point. They steamed about half-way up into the straits and, finding not a single cake of ice, concluded the *Bear* must long ago have gone to Melville Island. They then returned south and, believing that the *Bear* was not less than 200 miles north of them, went into winter quarters a few miles away from her.

In general I am telling this story as it appeared to me at the time, giving each situation as it then seemed and without throwing upon it any light which was not then available. I shall depart from that policy here by saying that Knight's story was later on established by the sworn testimony of some of the men on the *Bear* and by the verbal report of the majority of the others. There was disagreement on certain points but in the main the story stands about as Knight gave it to us, except for the fact that Knight's presentation led us to think that the Captain had been more or less the tool of some of the crew. A later investigation put more of the blame on him, where it must officially rest, anyway, for the theory is that a captain is supreme commander of a ship and responsible for everything so long as he remains in command irrespective of what pressure or influence may have been brought to bear upon him.

This unpleasant story belonged in the past and we tried to dismiss it from our minds. But it came up later in such connection and with such force that it cannot be left out of this narrative without a fundamental falsification of it. We have the choice of placing the blame where it belongs or leaving the reader to lay it on men to whom it does not belong.

The depot left by Kellett the spring of 1853 at Dealy Island we reached on June 28th in the evening. Its location is indicated from afar by a monument on top of the highest part of the island that it must have taken even a large ship's crew a long time to build. Unfortunately I did not write a description of this beacon at the time, and still more unfortunately we had had on the whole trip no camera to take a picture with, for all our films had either been used or spoiled. As I remember it, there must have been originally a pyramid-shaped pile of boulders from fifteen to twenty feet on a side at the base and ten to fifteen feet high. This rock pile had been painted over to make it more conspicuous and many of the men had written their names with paint, scratched them in, or even chiseled them into the rock. Something had been wrong with the structure, for there had been a sort of landslide of rocks from one of the sides. From the center of the pile a pole rises up like the single mast of a ship. Altogether, it is beyond comparison the most conspicuous monument in those parts of the Arctic over which we have traveled. As I hunted overland I had seen it the day before from a hilltop a distance of twenty miles.

The depot itself was evidently made in summer and without an appreciation of the disadvantages of the location. The site had clearly been chosen because of the abundance of splintered rock suitable for building, and a house had been constructed. We measured it roughly, but I forgot to record the measurements and must rely on the mere impression that it was about forty or fifty feet long, fifteen or twenty feet wide, and the gables eight or nine feet at the ridge. It had been roofed over with boards and canvas and filled with stores which are described in the records as, "two hundred and eighty-eight days' provisions for sixty-six men." There were additional things, such as casks containing clothing, equipment in the nature of spades, axes, etc., a cooking oven, and several tons of coal. Of this last we used seventy-five or a hundred pounds for fuel both there and later, for we took some along when we left. It was a sort of powdered coal, pressed into briquettes, and burned well even in our blubber stove which had no provision for a strong draft.

The disadvantage of the location is that the house stands under a cliff a hundred and fifty or two hundred feet high. In the fall the blizzards pile the snow over this cliff into a drift in the lee, so that the depot was probably buried out of sight long before Christmas of the first year. The weight of snow gradually accumulated during the winter but, as the roof seems to have been stoutly braced, it may have withstood the strain until spring. That it should then endure was impossible with any structure of boards and planks, for as the snow became wet and granular with the summer thaws it would press on the roof with the weight of thousands of tons, for the drift there in early spring would not be less than fifty or seventy-five feet in depth. Naturally the roof caved in. When Bernier visited the depot in 1908 he found the roof gone and, not appreciating the reason, he replaced it with a new one which naturally collapsed the following winter.

When we reached the house that evening we should hardly have found it but for the monument above, which guided us directly. There was only a corner sticking out of the snowbank, although the rivers had been open on Melville Island now for weeks and most of the land was bare of snow. But these were exceptionally warm days and we could almost see the house creep out of the snowbank, so that by the time we left there was less than a quarter of it still buried.

We were greatly interested to find out the condition of the depot and examined it as the snow receded. There seemed to have been three layers of casks over much of the floor. Most of the casks in the upper layer have been broken. Those containing flour seem to have burst through expansion of the contents when moisture soaked in through the wood. Still, we found some flour barrels that had not been broken and one of these we opened. The flour inside was naturally dark, for in 1850 when it was ground in England the modern process of making white flour had not yet been discovered. It was dry but so hard we had to pry it out in chunks with our hunting knives. Pieces of it could, however, be powdered between finger and thumb. It had a sour smell not very different from that of a can of yeast. The rest of us were not inclined to make bread of it but Emiu said he was hungry for hot cakes and so we let him try. Somewhat to our surprise, the sour smell disappeared entirely in the cocking and the pancakes proved excellent.

Particularly we looked for sugar. After some search we found a barrel marked "Sugar," but on being opened it was found to contain unsweetened chocolate in cartwheels, varying in thickness from an inch and a half to more than two inches and about fourteen or sixteen inches in diameter. Some of this was badly molded but there were entire disks in nearly perfect condition and the centers of even the moldy ones were good. Later when we found a barrel of sugar it proved to be syrup, brown, with more of a tang than is common now in sugar—a slight but agreeable burnt taste. Evidently moisture enough to liquefy the sugar had soaked in through the wood. By digging deep we were able to get some undissolved sugar from the bottom. Both Noice and Knight considered themselves expert in candy making and for a day they made chocolate and chocolate candy by combining the sugar and chocolate in various proportions.

Barrels of potatoes and other dried vegetables were all spoiled. The hard bread we did not find. It was probably in the bottom tier, and the two lower tiers were so embedded in solid ice that it was only a few barrels of the second tier we were able to get at. One article of food was better than fresh, a small barrel of currants, damp enough so that practically they were soaked in wine. On top where they were dry, the sugar had come out of them and crystallized. They were the most delicious currants we ever tasted, although originally they cannot have been of very good quality, as we judged from their size and the fact that they were not very clean. In fact, there was a good deal of gravel and sand mixed with them, but they were the best thing we found and we carried away forty pounds.

Probably boots and clothing had been in some of the boxes the fragments of which were lying around. It may have been Bernier's men but more likely polar bears that had scattered these on the ground around the house and in heaps inside it, so that it was impossible to tell how they had been packed. But other containers had not been opened. We found a barrel of pea jackets, inside of which was a package marked with the name "Lieutenant Hamilton." The two or three jackets on the outside were decayed, but some on the inside of the package were in perfect condition and appeared to be made of better broadcloth than one can buy nowadays. They were shining and silken and could well have been worn by any dandy in a masquerade.

There were barrels of underwear where, to our surprise, the wool was in much better condition than the buttons. These were large old-fashioned horn buttons and came to pieces, though the thread still held and the garments were sound and clean. Jerseys and woolen stockings were also in good condition and a barrel of mittens were perfect. The men at my suggestion took a pair of mittens each, and asked to take each a pea jacket and a sweater, and this was agreed on condition that when we came to Banks Island and had to abandon the sleds they would carry the articles themselves, a thing they readily promised to do.

There should have been a quantity of salt meat in the depot and barrels of it may have been in the lower tiers. One small barrel had probably contained either brandy or rum. The bung was gone and it had been empty for many years, possibly since prior to Captain Bernier's visit. There were tinned vegetables and meat in abundance although we did not see them till the last day, for they were in that part of the house which was just appearing from underneath the snow. These were large tins holding perhaps five pounds each and painted red. They were then marked in a different color paint with the names "carrots," and "mutton." Doubtless there were other varieties farther down. We opened several of the cans, and while they were not obviously spoiled we were afraid of them. We were especially interested in the mutton and opened three cans, the contents of which we later threw away outside the house. They did not smell like the tinned mutton of today, but I have thought since that this may have been due merely to the different processes employed at that time.

The night before we left, my favorite dog Hans got loose and was sleeping down by the depot in the morning. I became instantly fearful that he might die from ptomaine poisoning if he had eaten the tinned mutton. Sure enough he had eaten it. It was not possible he could have finished the whole fifteen pounds but the lot was gone so he must have buried some of it, a trick in which he was an adept. He was round as a barrel from overeating and disinclined to move for that reason, but otherwise there was no sign of ill effect.

We concluded that something between one-third and one-half of the food, clothing and equipment left in the depot was still in usable condition, with certain things, such as the currants and mittens, as good as new, and others, such as sugar, quite as wholesome as ever although not in perfect condition.

Two days only were to be spent at the depot but on the second day Emiu was taken violently ill—acute indigestion from overeating and not, I believe, from the food being spoiled. Between "hot cakes," eaten with ovibos fat and syrup, and various kinds of candies made by Knight and Noice, it was a wonder that Emiu was the only one afflicted.

From the camp we could see ovibos herds grazing in various directions. There was coal in the depot and we had seen some coal float on the beach farther east. The depot stores were in fair condition. On the basis of these circumstances Noice, who had become a great enthusiast for exploration, proposed that we should spend the summer here and the following winter, making an additional ice journey to the northward in the spring. He had made a similar proposal up in Lougheed Island after we found the coal mine. The idea was attractive and I had thought a good deal about it on my own account, but our dogs were not so good as formerly through the mere fact that the best of them had become old in our service—they had been middle-aged when we got them four years before and a dog of eight is well past his prime. Then there was nothing here out of which we could build sledges and one of ours was now so rickety that we were able to haul on it little but bedding. We usually carried about two hundred pounds of fresh meat with us, provisions for four or five days, and that with the cooking gear and heavier articles was now all on one sled. I was forced to the reluctant conclusion that we had better adhere to the plan of overtaking our ships at Kellett and sailing home.

There was an alternative which I had seriously considered. When we were on the east coast of Melville Island I asked the men whether they would be willing to cross straight south for the northeast corner of Victoria Island where we would pick up Storkerson's records, ascertain if he had finished the mapping and finish it if he had been unable to do so. We would then spend the summer in Victoria Island, cross Dolphin and Union Straits in the fall and traverse that country, with which I was so familiar from the year spent there in 1910-11, to Bear Lake and the Mackenzie and thence out to Edmonton and Winnipeg. Emiu was homesick for Nome but the two white men agreed willingly. I thought the matter over for three or four days but finally gave it up.

Because of Emiu's illness we could not leave Dealy Island before the evening of July 4th. Two days later we reached Bernier's house about a mile from Parry's Rock at Winter Harbor. Here we spent two days getting several good sets of observations. We then followed the coast southwest to the vicinity of Cape Providence and took a course which, according to the map, should have brought us to Point John Russell on Banks Island but really bore well east of Peel Point on Victoria Island, for, as our later observations showed, Point Russell is wrongly placed on the map by nearly a full degree of longitude.

The soundings turned out to be strikingly similar to the ones taken on our ice journey north of Borden Island. Seven miles from shore we got four hundred and eleven meters and all the way across the sound the depth varied slightly up and down, with a maximum of five hundred and two meters near the middle, which happened to be the exact depth of the last sounding taken on the ice journey a hundred and twenty-five miles northwest of Cape Isachsen. Were we at that time in the middle of a sound somewhat wider than Melville Sound? We think it likely but only further exploration can tell.

Crossing Melville Sound was no more fun than we thought it was going to be. The water channels were deep, the dogs swam and the sleds floated. The rounded hummocks were slippery and we hardly dared to climb on them out of the water for fear the sleds might slide sidewise and be upset, and we had to keep hold of the dogs to restrain them from scrambling out of the icy water and up on the protruding knobs of ice. Part of the time it rained and on July 21st my diary says that we had the heaviest rain I had ever seen in the Arctic.

Occasionally there would be stretches of a few miles where all the thaw water had run off into a neighboring lead or crack. This was good traveling in being nearly level and nearly dry but the ice needles were sharp as knives. They made holes in our boots and lacerated the feet of our dogs. A new pair of our ugrug-soled boots would have been good for perhaps a week or two of this sort of walking without patching, but the dogs' boots of thin canvas used to wear out in half a day, and even with the closest watching one dog or another would get footsore. Those that worked the hardest would get sore the quickest, for a dog that is hauling with all his strength steps twice as hard upon the needle points as one that is merely walking.

One of our best dogs was Sapsuk. He had belonged to Captain Bernard's team and was a favorite not only with the Captain but with Thomsen who drove him later, and in fact with any one who knew him. Now his feet were sorer than those of any other dog, so we slipped him from his harness and allowed him to follow behind. Later other dogs became footsore and eventually there were four of them loose, following behind. Sapsuk kept close to the sleds but some of the others would lag a mile.

One day when Victoria Island was already in sight we were traveling along with Sapsuk following behind. I was ahead as usual and noticed a polar bear coming from the direction of Banks

Island. The teams were stopped and I lay down on an ice hummock to wait, for he was heading to pass us at a distance of two or three hundred yards. Unfortunately he climbed over a hummock that brought him against the skyline. One of the dogs saw him and a moment later they were all barking. The bear was behind another hummock and he must have stood still a while, listening. His mind was soon made up that there was danger in the wind, and the next I saw of him he was going off at a lumbering gallop. At about four hundred yards from me he paused and I fired. I learned later that this bullet had gone through his shoulder, breaking the bone but missing any vital part. He disappeared but reappeared promptly, going slowly now and stopping frequently. In ordinary course his end would have come in a few minutes with a second shot.

My attention had been centered on the bear and the men had had their hands full with the teams. Nobody had noticed Sapsuk, and the first thing any of us knew he was half-way to the bear.

We have discussed elsewhere the Eskimo method of hunting bears with dogs and I have given my reasons for never following it. Now we were going to have a case of it in spite of ourselves. The first alarm that occurred to me was that Sapsuk had never been after a bear and would not know how to take care of himself. We had one or two dogs which had been bought from the Victoria Island Eskimos and recommended as good bear dogs. There were also one or two others that were remarkably agile and at the same time far less endeared to us than Sapsuk. We turned these loose hastily, hoping that they might get to the bear first. No such luck. The bear was going slowly and Sapsuk went for him straight as an arrow. He had often eaten bear meat and apparently recognized him not as a fighting animal but merely as food. I could see with the glasses that he ran up to the bear in the most naïve way and bit into him, apparently with the idea that he was beginning a meal rather than a fight. The bear turned to give him one blow and poor Sapsuk lay paralyzed and flat on the ice. A minute later the other dogs caught up and surrounded the bear about a quarter of a mile away, but apparently they had taken a lesson from Sapsuk's case, for none of them dared go nearer than four or five yards except one of the Victoria Island dogs.

The bear was losing strength and was not going fast, but the dogs did not really hold him and he was making progress away at the rate of three or four miles per hour. I must say, however, that the one Victoria Island dog was admirable and had there been two or three like him they could have held the bear without the slightest danger to themselves.

It seems that in Nome where Emiu had learned his dog-driving from white men it is generally the custom to re-name Eskimo dogs with white men's names. The rest of us rather preferred when we bought a dog to let him keep his Eskimo name but Emiu felt otherwise. He gave the name "Jack" or "Brownie" or "Towser" to every dog that he had anything to do with. He had been driving this dog and now his name was Tip.

Tip was not in the least excited. He did not even bark. If the bear faced in his direction, he would make a strategic retreat and keep a distance of at least five yards. But the moment the bear turned away towards another dog, he would run up and nip him in the heel, not viciously as an excited dog might have done, but sharply and skilfully like a good workman at once confident in his skill and proud of it. These bites were evidently painful, for the bear always turned quickly but he never could turn quite quickly enough to get a blow at Tip, who by then was standing so far away and looking so unconcerned that the bear apparently was in doubt which dog to blame. But Tip had no efficient support. The other dogs barked a great deal and then approached from the wrong aspect so that several of them had narrow escapes from the paws.

All this was not half so long in the doing as it has taken me to tell it and was seen besides from a distance. I had to get nearer for firing to be sure not to hit a dog, for one or another was continually on the far side. At a hundred yards I lay down and watched my chance, and when the dogs were momentarily out of the way sent the final shot.

The bear fell perhaps half a mile away from where Sapsuk had fallen. Sapsuk was no longer in sight but there was no difficulty in following the bear's blood trail back to where he lay. On his skin the wound showed as two or three deep scratches but the blow had struck in the small of the back and his hind legs were paralyzed. I felt him over carefully and could not see that any bones were broken so that the case did not appear fatal. We camped right there for the night and I made him a comfortable bed of the bear's skin. The next morning he was unable to stand up but appeared otherwise so well that we began to hope for him. Accordingly we made him a nest in Emiu's sled and took him along.

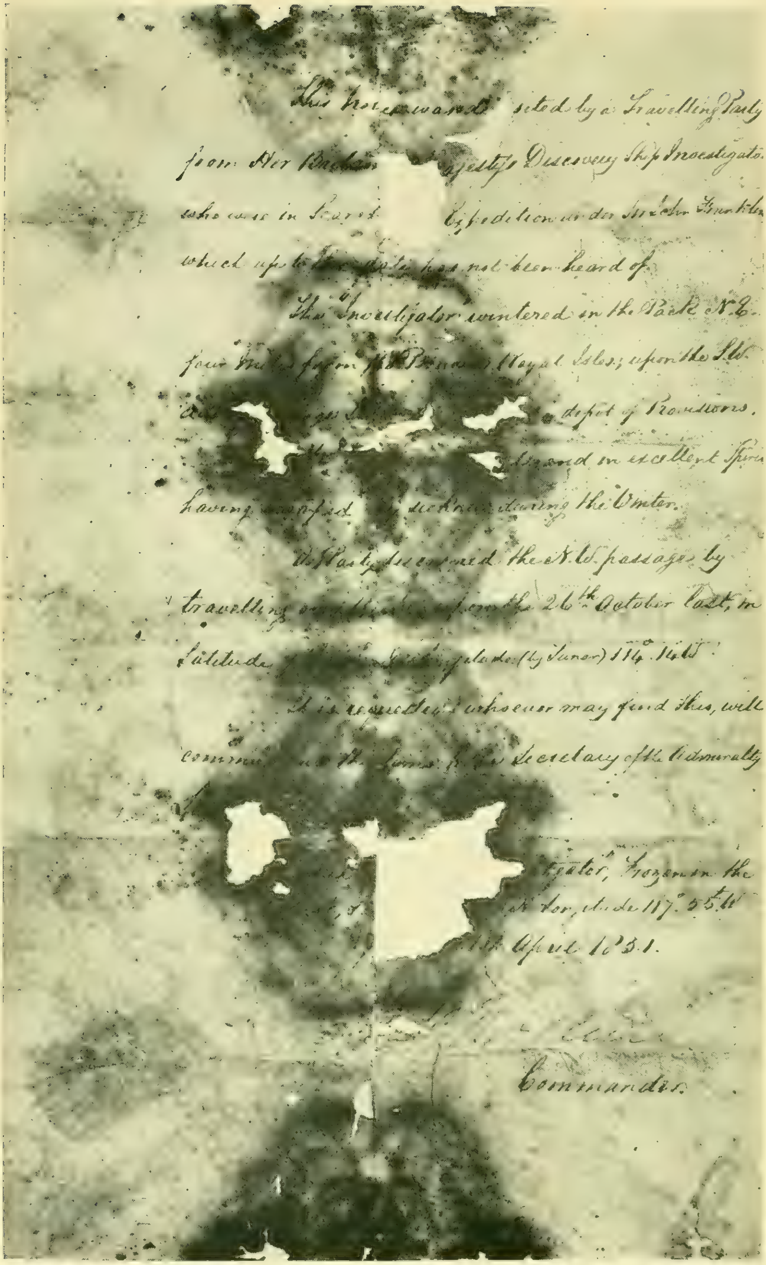
Our course was taking us much too far east, so we traveled west and eventually landed at Point John Russell, under great difficulty, however, for within a mile of land the ice was perilously rotten. When we finally got to the actual water we were able to find a loose cake of ice large enough to be used as a ferry although not for the whole party. We put some of the gear and two or three dogs on at a time and made several trips until everything was landed on some grounded ice from which it was possible to wade to the beach.

On the Admiralty chart the land is very much elongated out to Point John Russell so that it is at the end of what may be called a peninsula. In reality, we found no such formation and it was impossible to tell where Point John Russell might really be, the coast curving so uniformly and gradually. This was my first visit to the locality but Knight had been there before and knew what Storkerson's party had decided to call Point John Russell, though they had no more evidence to base their decision upon than we. They had seen this point only in winter but had nevertheless suspected that there might be a good harbor. We had the finest sort of opportunity now to judge.

The harbor was first reported to me by Storkerson the spring of 1916 in Borden Island as a suitable place for the *Bear* in case she could get that far up the straits but could not cross to Melville Island. He thought she could lie here safe while watch was kept from a five hundred-foot lookout three or five miles inland. From such vantage in clear weather it would be possible to see half-way across the sound and to judge the condition of the ice or to determine its absence. It is certainly a strategic position for any such undertaking. Next after Storkerson it was Knight who described this harbor and who now guided us to it, and as I had already given Storkerson's name to the great bay on the west coast of Banks Island I called this Knight Harbor. It is essentially a long sandspit running out from the land, not very different in configuration from the well-known whaleship harbor at Herschel Island. There is absolute protection from every wind except southeast, and even from this wind there is fair shelter. The water was probably deep because there had been big ice cakes inside the harbor the spring of 1916. They were so big that they could not have melted away in a summer, but they were gone and must have floated off. Furthermore, there were now several seals lying scattered over the harbor ice which is a fair indication of depth, for I have seldom found seals lying on ice unless the depth was three or more fathoms.

We could take our sleds no farther, and it took several days to

A Spring Evening in Polar Regions.



This Notice [illegible]sited by a Travelling Party
from Her Britannic [illegible]ajesty's Discovery Ship Investigator
who were in Search [illegible] Expedition under Sir John Franklin
which up to this date has not been heard of.

The Investigator wintered in the Pack N.E.
four miles from the Princess Royal Isles; upon the S.W.
[illegible] depot of Provisions.
[illegible]and in excellent Spirits
having escaped [illegible] sickness during the Winter.

The Party discovered the N.W. passage by
travelling [illegible] upon the 26th October last, in
Latitude [illegible] Longitude (by Lunar) 114° [illegible] W.

It is requested whoever may find this, will
communicate the Same to the Secretary of the Admiralty
[illegible]

[illegible]tigator, Frozen in the
[illegible] Longitude 117° 55 W
[illegible] April 1851.

Commander.

McClure's Record Telling of His Discovery of the Northwest Passage.

convert the boat cover and other pieces of canvas into pack bags for all the dogs, and into bags in which we ourselves could carry whatever we desired. While the men were busy at this I hunted, seeking both food and information. I was especially anxious to determine the location of Point John Russell, for I suspected that Captain McClure had left a record there when he made the sledge journey in the fall from the *Investigator*, lying near the Princess Royal Islands, to this vicinity from which he had seen to the north open water which he rightly identified as Melville Sound. This meant that he had discovered the Northwest Passage.

On July 26th I had been inland and was returning to the coast, for once without any thought of McClure's beacon. I had taken it for granted that it must have been at some conspicuous point. But I was half a mile inland following a gravel bank twenty or thirty feet high, on the north side of a small creek which has its mouth about three miles south of Knight Harbor, when I almost stepped upon a brass cylinder lying on the level ground. There was not a sign of a monument though there were three or four small stones scattered about. None of them would have weighed over ten or fifteen pounds. Apparently the beacon must have been a heap of sand in which these few stones were included. The wind has since blown the sand away, leaving this spot as level as any other. But the stones and the brass tube the wind could not move.

The top had been poorly soldered and the wind had blown the cylinder full of sand which was now soaking wet. There was small hope of finding the record in good condition. I took it to camp, opened the cylinder carefully, removed the wet wad of paper and dried it before attempting to unroll it, and when it was eventually opened I was surprised to find it legible with the exception of probably less than half a dozen words. It runs as follows:

> "This Notice was deposited by a Traveling Party from Her Britannic Majesty's Discovery Ship *Investigator* who were in Search of the Expedition under Sir John Franklin which up to this date has not been heard of.
>
> "The *Investigator* wintered in the Pack N.E. four Miles from the Princess Royal Isles; upon the S.W. side of the large (word missing, paper torn) left a depot of Provisions.
>
> "The Crews are all well and in excellent Spirits, having escaped any sickness during the winter.
>
> "A Party discovered the North West passage by traveling over the Ice upon the 26th October last in Latitude 73° 31′ N., Longitude (by Lunar) 114° 14′ W.

"It is requested whoever may find this will communicate the Same to the Secretary of the Admiralty, London.

"Dated (several words illegible—perhaps 'safe and sound') *Investigator* frozen in the Pack, Latitude 72° 50', N. Longitude.

"21 April, 1851,
"——McClure (Signature partly illegible),
"Commander."

One extra day we spent to happy purpose. During our outfitting for the overland march Sapsuk had been improving so steadily that when everything was ready he was almost able to walk. We waited this extra day to let him gain a little more strength.

Before departure we built a cairn on the site where I discovered the cylinder. It is not possible in sandy country to make a permanent monument, but we had the advantage of building this in summer where McClure made his in winter, and ours will probably last a little better. In the monument we left a copy of McClure's document, taking the original along with us, and added a record of our own, giving some information about what we had done and telling that we were on our way to Cape Kellett to overtake our ships and sail home.

Near the beach where our camp had stood, about two miles south of Knight Harbor, we propped up our two sledges one against the other so they stood like bears on their hind legs, conspicuous for a long distance. Without having any reason to think that the things we left would be found by any one who would want to use them, we still packed up everything in the safest manner possible. We then made a platform between the two sledges and put most of the things upon this platform, protected as well as possible from rain. A few articles we left on the ground. Some books were among the things we had to abandon—Dickens' "Christmas Stories," Churchill's "Crisis," Bigelow's "Applied Biology," Mikkelsen's "Conquering the Arctic Ice." These were left behind either because they were heavy or because we knew them almost by heart. And these others were carried on, either because they were lighter or more highly valued—Barham's "Ingoldsby Legends," Comte's "Fundamental Principles of Positive Philosophy," Boas' "Mind of Primitive Man," the Royal Geographical Society's "Hints to Travelers," and the American Nautical Almanac for 1916.

Besides these books and a minimum of bed clothing we carried our sextant and artificial horizon, some spare notebooks, a manak, four large snow knives, and five hundred rounds of ammunition. The manak, snow knives, and large quantity of ammunition were carried on the general principle of always having with us an outfit adequate for supporting us at least a year. The heaviest single item was our geological collection, about thirty pounds. These were specimens gathered in the Ringnes Islands, Lougheed Island, and on the east coast of Melville Island, including samples of coal both from Lougheed Island and Melville Island.

Point John Russell by our observations is a degree farther west than the longitude given in McClure's record and upon the map. This is not surprising, especially in view of the parenthesis in his record which explains that the longitude was secured by a lunar distance observation. This is well known to be an inaccurate method of getting longitude and especially so if there is but one observation and that taken under conditions of discomfort, as probably was the case with McClure. There could be little doubt of our observation, for not only were our watches keeping a satisfactory rate, but it was only a few days since we had left Parry's Rock, the only place in the North that is considered reliably located. It could hardly be supposed that our watches had varied enough since then to account for more than a small fraction of a degree.

Judging from this discrepancy between the map and our observations and also from the fact that the northeast corner of Banks Island is obtusely rounded instead of elongated to a narrow tip as the map shows, we concluded that the coast line stood in need of even such hurried rectification as we could give it. So we followed the coast when we made our start July 28th. As usual, I walked inland to get what knowledge of the country was possible. Knight and Emiu looked after the pack dogs and Noice took compass bearings along the coast and made a sketch as he went. They were to make only five miles the first day, as I did not expect our crippled dog to be equal to more than that. That evening I wrote in my diary: "Sapsuk hobbles along wonderfully and is said to have caused no delay, though he is very wobbly and does not walk as if he could go a hundred yards."

The next day we made better progress and still Sapsuk kept up, and day after day he kept getting better so that our worries for him were over.

At Dealy Island I had agreed that the men might take from the depot certain articles of clothing on condition that they would carry them themselves across Banks Island. But when we made our cache near Knight Harbor they had changed their minds and abandoned some of them; others they carried bravely at first, but before many days most of them were thrown away. A few things I had taken to serve the semi-scientific purpose of showing in what condition the Dealy Island depot had been found after sixty-four years, and these the dogs carried. There was also a sweater intended for Captain Bernard.

After following the coast for four or five days I came to the conclusion that getting game near the straits was too difficult and that we were being too much delayed. We could not in any event complete the east coast of Banks Island, so we did not seem justified in carrying the survey farther. The all-important thing was to get to Kellett so that our ships would not have to wait for us too long.

When we commenced our inland travel we fell in with a group of lakes, the largest of which Captain Gonzales had discovered in the early fall of 1915. We now found several other lakes and ascertained that the head of the big river which we had followed south from Mercy Bay in 1915 and could only cross after going a long way inland, was in one of these lakes, although some of them drain into Prince of Wales Straits. The journey was pleasant except for the need to hurry. Try as we would, we could not do more than average about ten miles a day. There were a few big dogs which could have done better even with packs of thirty or forty pounds, but most of the dogs were small and with packs of even twenty pounds they were played out at the end of ten miles. There was continual trouble with the packs of the little dogs, too, through their dragging in the water and through bunting against stones or inequalities of the ground.

Thousands of owls have been within my sight in the North but I had never happened upon one of their nests. On this trip we found a nest almost every day, and being ignorant of the natural history of these birds I was surprised to find the difference in size among the young. In one nest there were four birds, the smallest apparently hatched that day and the largest as big as the parent birds and able to fly away when I came near. In another nest were two eggs and three birds, the largest apparently half-grown.

As on our other overland journeys across Banks Island, we found continued evidence of the presence of Eskimos in former years, chiefly in the form of ovibos skeletons, often ten or fifteen together, and stone depots in which ovibos meat had been temporarily kept. There were also tent rings of sod or stone. We saw inuksuit only rarely, indicating that the caribou had been unimportant in the dietary of these people as compared with ovibos. Towards the southwestern part of the island we began to find the feathers of geese that had been moulting this summer or last, and an abundance of goose bones around the campsites. None of the camps seemed of great age; certainly great age cannot be demonstrated. Probably a century would cover the oldest. Most of them are from the period since McClure abandoned the *Investigator,* judging from frequent traces of the ship, generally in the form of splinters of painted boards.

On August 13th when about eighty miles northeast of the Kellett base we found coal, or rather wood that was partly turned to coal. It was reddish in color and burned with a fragrant smoke. Without the heavy sweetness of incense, it was agreeable enough so that we stood in the way of the smoke to sniff it. As in Lougheed Island, this "coal" was on the surface and easy to secure, though the quantity in evidence was not nearly so large. It outcropped here and there from a belt about two hundred yards long north and south and ten to twenty yards wide. It was most abundant at the surface about a little knoll on which we built a small cairn, piling rocks and gravel on top of a heap of coal. There was mixed with it a great deal of fossil gum resembling amber, but the nodules found were never as large as an olive.

The country was beautiful, with large level stretches of bottom lands. Caribou were moderately numerous but their traces were still more abundant. On the whole, this looked like an ideal site for a summer hunting camp and even for a winter camp if there were any object in living there, but it has not nearly the strategic value, from the point of view of an explorer, possessed by the coal mine in Lougheed Island.

We were more than half-way across Banks Island and all was going well, including the recovery of Sapsuk which was now almost complete. It was a fine morning and we were camped where fuel was unusually abundant (*Cassiope tetragona*). There were several aluminum plates in our equipment each of which bore the mark of its user with whom it was optional to wash it, an option that had not been exercised for some time. This morning Emiu boiled some water to wash his plate with and suggested that he should wash everybody's plate. He was doing this when I left camp to hunt.

Sapsuk, nearly well, was still exempt from carrying a pack, and remained at the campsite snooping around after the men with the pack dogs had started. When they had gone about a hundred yards it occurred to Emiu that he had left behind the greasy dish-washing rag and that Sapsuk might eat it. He ran back but was too late; the rag was gone.

I learned this at camp time. From Emiu's account the rag was so large that Sapsuk's death seemed inevitable, but I did the only thing that could be done. He had not yet begun to feel the effects and his appetite was good. I fed him a large quantity of fat. Seal oil would have been better than the caribou suet, which was the only thing we had, but I am inclined to think the case was hopeless from the first. The next day he followed without trouble but the second he was very ill. I am rather a coward in such things, so I left camp without giving any instructions, knowing that the men would do what had to be done. Sapsuk was shot that morning.

He is the only dog on the whole expedition that was lost on any of my journeys through any cause other than of the contagious dog "distempers." It was the bear, after all, that killed him, although indirectly, for had he been carrying a pack with the rest of the dogs he would have had no chance to remain behind in camp and pick up the rag that proved fatal. A contributing cause was that as usual we were limiting the dogs somewhat on the fat side of their ration. We gave them enough of meat that was not entirely lean for them to be fat and reasonably contented, but they were always eager for more fat and Emiu's housekeeping rag had naturally been tempting.

Until after the death of Sapsuk we had been carrying along certain remnants brought from the Dealy Island cache—a little chocolate, a little sugar (syrup) and some split peas. Emiu was the only one in the party particularly fond of these and ate more than his share, with the result that he was now and then troubled with indigestion, probably chiefly due to the peas. These were split peas and looked perfectly normal but were tasteless and mealy, and some that were boiled for more than twenty hours refused to swell materially or break up. It was probably his last meal of these things that made Emiu so sick on the 16th that it did not seem advisable to have him travel.

I had been thinking that if we reached Kellett by the 25th it would be time enough, for the ships, knowing that I might be on the way, would have no occasion to start before that time, when their only task was to go directly out, once they hove anchor. But the men were worried, especially Knight. He told me on the basis of two years of association with the *Bear* that, while he had no doubt the *Sachs* would wait up to the 25th and even later, he felt very sure that the *Bear* would "take no chances" and would start as soon as they saw any excuse for doing so. He reminded me that by my own appointment the captain of the *Bear* was senior officer in my absence and that he might order the *Sachs* to sail out also. I used to argue with Knight that there was no motive for anybody doing this, but he stuck to his point. The result was that I, too, began to be concerned about the situation and when Emiu could not travel on the 16th I decided to walk ahead. With the pack dogs we could not make more than ten or twelve miles in a day and at that rate it would take five days to reach Kellett.

Before separating from the party I took an observation for latitude at noon August 16th and asked Noice to take time sights in the afternoon, for he had already had ample practice both in using the instruments and in making the computations. We did not have with us the nautical almanac for the current year and our computations were never intended to be anything more than approximate. They would all have to be checked up when maps came to be made on the basis of them.

Of the prejudices with which I came North in 1906 I have succeeded in shedding most, but one I have never tried to get rid of—a disinclination to eat alone. There are numerous instances where I have been gone from camp thirty or more hours on caribou hunts, and on none of them have I ever eaten unless there was some one to share the meal. I expected now to walk without a break and without food to Kellett. This was a longer walk than I had ever attempted before and the men very thoughtfully had boiled some caribou tongues which I found in my pack bag. I first took them out to leave them behind but my companions seemed so hurt that their forethought was not appreciated that I concluded I had better take them along.

It was shortly after noon when I started, a beautiful Banks Island day. Fair weather continued up to seven or eight o'clock in the evening, when fog came on as it often does at night at this time of year. I now found it more difficult to keep a course, and about midnight the fog became so thick that I had trouble with the little lakes that are scattered everywhere. The ones of regular outlines were not so bad, although there is no doubt that I often turned to the wrong side, thus making the detour longer than necessary. But a real nuisance was to walk out on a peninsula on the assumption that the water to the right and left were two different lakes. On some occasions I had to go back as much as half a mile to get out of one of these traps. Towards morning it rained and there was sticky clay on the hillsides, so that the walking was pretty bad. It was uphill and downhill, too, continually.

I was carrying between fifteen and twenty pounds—the boiled tongues, my rifle, a hundred rounds of ammunition (an excess of caution), the field glasses, my diary, two extra pairs of boots and several changes of socks.

The morning of the 17th I had been walking steadily seventeen and a half hours and my feet were beginning to chafe. There is no such thing as getting tired on a long journey, or at least on such long journeys as ours. I had been steadily walking every day for months and could not have been in better form. It seems to be the general experience of long-distance walkers—it certainly is mine—that under such conditions the feet give out by becoming sore rather than through the muscles becoming tired.

When the feet are getting sore the best remedy next to a rest is to change socks and boots, for new footgear presses on different spots and rests the chafing parts. I sat down beside a little stream of beautifully clear water, bathed my feet, put on new socks and boots, and then ate one caribou tongue—perhaps half a pound. So far as I recall, this is the only thing I have eaten in the Arctic by myself, except some caribou marrow that I once tried, having often eaten it cold but wanting to know what it was like fresh from the animal. I don't know whether it was the idea of eating something that still retained the warmth of life or whether it was the marrow itself, but that experiment made me ill.

After about five more hours of walking, in the middle of a beautiful sunshiny forenoon I came to some apparently familiar hills. If my identification of these was right, my course during the fog had been deflected and I was going to strike the coast twelve or fifteen miles southeast of our base. At first I thought of trending directly towards Kellett, but concluded that it would be interesting to see the ice conditions, and that one of our ships might even be lying in this vicinity, in case there were heavy massed ice up around Kellett. Wilkins had found such conditions in 1914. I accordingly kept on the same course to the coast.

From the coast hills I had a clear view of the Kellett base across a bight a dozen miles away. My glasses showed that there was a single ship there. The ship puzzled me, for it had only one mast. This could not be the *Bear* nor the *Sachs* either, unless they had taken down a mast for repairs. Still there was a possibility of error, for the ship was broadside to the land and her two masts might be in direct line, one hiding the other, although it did not appear so, for I took the view to be slightly on the quarter.

The added excitement of such unexpected conditions made me walk faster and part of the time I ran. It was just twenty-eight hours from the time I had left my party that I got down to the little lagoon half a mile east of our winter quarters. The distance, according to our astronomical observations, was about sixty-seven miles in a direct line, but the actual walking was probably ten or fifteen miles more than that, what with my confusion among the lakes with the fog and the detour to the coast east of Kellett.

I thought then that it was a pity Robert Louis Stevenson had the bother of inventing a plot for his "Treasure Island." I found an equally good one ready for me here, all but the murders and the wooden leg, and even tragedy was not lacking. I shall tell the story not entirely as I understood it then but with certain side lights of later information. Part of it consists not of actual facts but of my interpretation of them, but it is the interpretation which I still retain after all the available evidence has been gathered. Probably no two men on the entire expedition would agree with me throughout, but there is no point on which several of them do not agree with me, nor are there any two others who agree entirely with each other.

I came first to what proved to be the *Sachs*. She was lying broadside on the beach, her foremast gone and the yards of the mainmast nowhere to be seen, nor her sails. Her high wheelhouse had been torn off and was a hundred yards up on the land where it was evidently being made into part of a dwelling. Captain Bernard could never have been guilty of such vandalism. He was too fond of his ship. I could have conceived of him going out in the night and setting fire to her, but his tearing her to pieces was unthinkable. Clearly whoever was in control was not Captain Bernard.

Our old house was standing farther to the west and evidently uninhabited. But there was some one working at turning the wheelhouse into a building. When I went up I found two men whom I had never seen before. They were Otto Binder, an American, and August Masik, a Russian, both from Nome. They had come east the previous year on the *Challenge*, and it was they about whom Captain Gonzales had told me as having a hunting camp on De Salis Bay on the southeast coast of Banks Island. Binder was the man who had gone to Kellett in the fall with the Kilian brothers and Masik had followed later.

There are many branches to this story. I must tell first about the tragic death of Peter Bernard and Charles Thomsen.

# CHAPTER LX

## THE TRAGEDY OF BERNARD AND THOMSEN

THE story begins with part of what Captain Gonzales had related in Melville Island. When Thomsen had arrived at Kellett from Liddon Gulf the spring of 1916, he and Captain Bernard had decided upon a well-meant disregard of my orders. There was no man on the expedition more loyal than Bernard or more interested in its success. He had been commander and owner of the *Sachs* for many years, and aboard of her there had never been discipline but a sort of friendly and amiable anarchy. Apparently the Captain never expected his own orders to be carried out except in the most general way, nor did he have a conception of carrying out orders in any other spirit. He tried to understand what was wanted and worked hard and faithfully towards its accomplishment, worked before breakfast and after supper, but always in his own way.

It appears that when Thomsen came home and explained to Bernard what the situation was, they agreed that we would have great difficulty in Melville Island (as indeed we did) in getting along without more sledges than we had there. They decided that the sensible thing to do was for Thomsen to stay at Kellett until fall. During the summer Captain Pedersen would almost certainly arrive with sledge material, primus stoves and other needed things. As soon as the material was in hand, Bernard would set to work building several sledges while Thomsen did the work around camp. Then with the first snow the two would start off for Melville Island, bringing me as many sledges as they had been able to make and whatever useful things they could haul along.

This was all against my orders but meant only for our success. This was a procedure which Captain Bernard thought would serve my ends better than the plans I had myself laid down. I know how he must have pictured to himself my rejoicing when they should arrive with all this unexpected and invaluable equipment. Had they arrived, our relief and rejoicing would doubtless have equaled anything that he could have imagined. No doubt there would have been no word said about Thomsen having disobeyed instructions through not coming back the previous spring, or Bernard neglecting my directions to remain at the base at Kellett and to make no attempt to connect with Melville Island. I had framed my orders as I did because I felt sure that he could not succeed in bringing to me in Melville Island anything of value in time for use this year. His actual arrival in time would, he must have felt, show me to have underestimated the possibilities, thus silencing any criticism.

In August Captain Pedersen arrived with the *Herman,* and according to Captain Bernard's anticipation was able to give him material for two sledges. He also gave him many things useful although not so imperatively necessary. The mail he landed for the expedition is said to have been four or five hundred pounds. To me this would be the most interesting mail of my whole life probably, for my friends who for a year had considered my Martin Point ice party dead and the expedition a failure, had found out that we were alive and well and keeping on with our work. The letters that people write under such circumstances could not fail to be of moment; many of them would deserve to be treasured forever.

After landing the supplies and mail, Captain Pedersen went forty miles southeast along the Banks Island coast and landed two Eskimo families who were to remain there trapping in the interests of the H. Liebes Company of San Francisco, owners of the *Herman.* He then sailed southwest towards Cape Bathurst and Herschel Island. Somewhere on this route he had met the *Challenge* and given Crawford the information which Gonzales brought to us in Melville Island, that Thomsen was coming north to us during the winter bringing sledges. Apparently Captain Pedersen did not know, or at least he did not mention to Crawford, that Bernard was coming too.

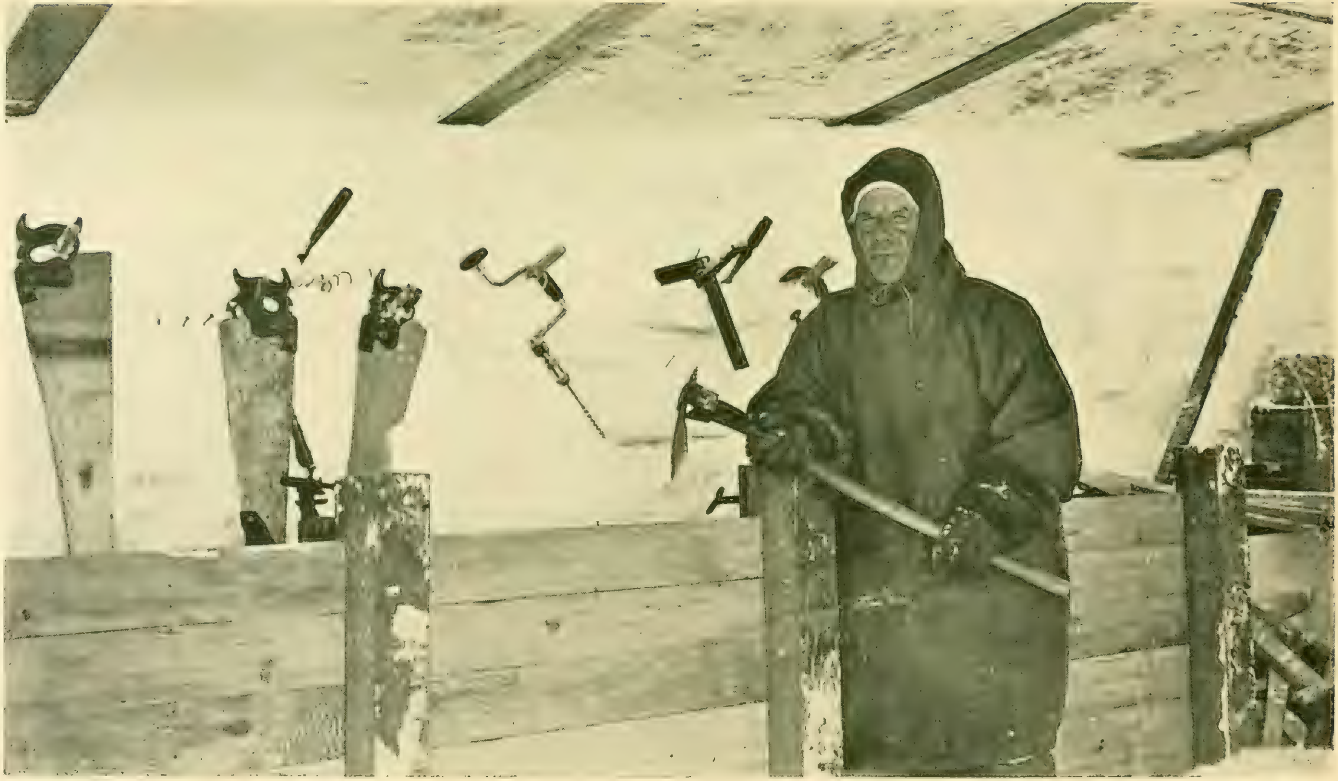
At Kellett Bernard set to work at once on the sledge-making while Thomsen hunted caribou and did other things to make the camp ready for winter. When the snow came and the ice along the coast was sufficiently strong for sledging, they made preparations to start north. Part of these preparations was that they induced one of the *Herman's* Eskimo families to move up to our Kellett base temporarily to help with the work while Bernard and Thomsen were gone in Melville Island. Just before setting out Bernard gave these Eskimos a calendar and explained that they should make one check on it each day and when they had thirty checks made he would be back again. This was not only a forecast of what he intended but also an agreement with the family that they should be home at their own trapping camp thirty days after he left.

The distance from Kellett to our Liddon Gulf camp by the route they would have to follow around the west and north ends of Banks Island cannot be given exactly, but is between three and four hundred miles. The Captain had had much experience with sledge traveling in Alaska where he had made trips of thousands of miles, and he failed to realize the different conditions under which he would now have to work. To him it seemed obvious, as he told the Eskimos, that he would be able to reach our camp in from ten to fifteen days. In Alaska he had often made two or three times that distance in the same length of time. Thomsen knew the road and where to find the camp, and there is no doubt that both of them looked upon the trip as a safe and easy one.

In Alaska where Captain Bernard had been, the standard dog ration, according to what he told me, is bacon and rice. They had the rice but not the bacon, and concluded rightly that seal blubber would do as well. When they started they had blubber and rice equivalent to a fifteen days' Alaskan ration for eighteen dogs. They would make a fire each night, cook the rice and feed that with blubber to the dogs.

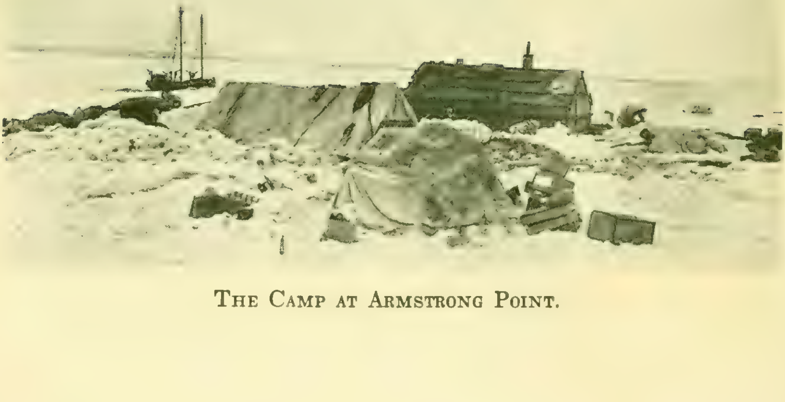
They drove the eighteen dogs in two equal teams, the second team pulling two sledges, one hitched behind the other. How sadly they had miscalculated everything was forecast by the fact (as the Eskimos told me later) that while the dogs started off on a run, they slowed down to a walk within the first half mile while they were still in sight from the house.

Beyond the three sledges, it is impossible to say what loads there were but they seem to have been heavy. Apparently they took all the mail, both letters and packages, and even some new books that friends had sent in to me. There were also presents for the other men in Melville Island, boxes of cigars, packages of candy, and even two quarts of whisky. In some way Bernard had formed the opinion that the *Bear* had not attempted to go to Melville Island, and what he took seems to have been selected on the basis of our having nothing there except what we had when Thomsen left. They were bringing carpenter tools, canvas for the sled-boat cover, material for dog harness, and, as I have said, many other things the amount and character of which we shall never know, for the Eskimos paid little attention to what was being



Captain Bernard and His Sledgemaking Workshop.

THE HOUSE AT BERNARD HARBOR.



THE CAMP AT ARMSTRONG POINT.

loaded into the sledges and were able to give only a partial list and the opinion that the loads had been very heavy.

They started sometime late in October and we can be sure that their progress was less than ten miles per day as against the twenty or thirty they had expected. On passing the *Star* they probably replenished their provisions to the extent of taking a quantity of rice, but from various evidences we suppose they took little else.

On the Gore Islands at the northwest corner of Banks Island was a depot of sugar with a few items of groceries. These had been left there the previous winter when I gave up the attempt of relaying sugar from the *Star* to the *Bear*. I have not learned for a certainty whether they visited this depot. We shall never know more than the bare outline of the story, for there is no information beyond what Castel was able to learn and infer. Perhaps I had better tell the rest of the story from the point of view of Castel and Charlie Andersen when they undertook to find out for me why Thomsen had not come to Melville Island.

Castel and Andersen separated from Storkerson's party near Cape Ross, Melville Island, early in May, 1917, more than six months after Bernard and Thomsen had started from Kellett towards Cape Ross. Castel's party was followed a little way behind by Natkusiak's party, who could not travel fast enough to keep up.

Conditions of weather and travel were the ordinary ones of early spring, good except for the prevalence of cloudy and foggy weather. Castel made a direct course across Melville Sound for Mercy Bay and found on the way no traces of Thomsen. At Mercy Bay he found two sledges, one which he recognized as Thomsen's with which he had left us at Melville Island, the other strong and new and beautiful, made in Captain Bernard's style. To the handle bars of one of the sleds was tied the following note, which is the only written document in the case.

> "December 22, 1916. We made a cache on the ice twenty miles NNE from here. We are out of grub and our dogs are dying. Eight of the dogs have died and we have ten left. We have the mail which we are taking with us.
>
> (Signed) "Peter Bernard,
> "Charles Thomsen."

This part of the story, then, was clear. They had reached with the three sledges and full loads a point on the ice twenty miles

NNE of Mercy Bay and about forty miles southwest of Cape Ross —sixty miles from our camp on Liddon Gulf. Why they turned back we shall never know. It is possible they met open water; in fact, that is the most logical supposition, except that it would be extraordinary that the water should be open at that time. Apart from this we might suppose that their difficulties had led them into a despondent frame of mind. Inasmuch as they probably believed the *Bear* had made no attempt to reach Melville Island they may have reasoned that we might have had bad luck in hunting and that even if they were to reach Liddon Gulf they might find us starving and in no better condition to help them than they were to help themselves. But it is clear that if there was no open water they could have left the two sleds and loads there, hitched all the dogs to one sledge and come through rapidly and light to Liddon Gulf. One of the things they had in abundance was kerosene, for Castel found that although they had taken a good deal from our oil drum at Castel Bay, there was still some left in it when he got there. They also had lanterns. It would have been easy for us with lanterns and kerosene to follow the trail back, pick up the sledges, and bring them to Melville Island. Even if there was water in the sound they should have camped at the edge of it to wait for it to freeze over, for at this time of year it surely could not have been many days until the frost would have made them a road.

Fearing the worst now, Castel proceeded westward. At Castel Bay he found evidence, as noted above, that they had taken kerosene from a fifty-gallon drum. The depot had originally contained other things but these had been removed by Lopez and Alingnak on their way to Melville Island in May, 1916.

The north coast of Banks Island is mainly precipitous. Under the heavy pressure of the winter winds the ice is heaped up roughly in ridges that seldom come quite to the beach. There is accordingly a comparatively level strip between the precipitous land and the rough ice, and this strip will naturally be followed by any one traveling by sled, especially in the darkness of midwinter when sufficient daylight is not available for picking a direct trail across the bays. Castel assumed that Bernard and Thomsen must have followed this strip. The trail was now months old and many blizzards had intervened, so that it was only once every four or five miles that they found on some hard snowdrift the tracks of the sled and men going west. At first there were some dog tracks but these became fewer, for the dogs had been dying one by one.

Two days' journey west of Mercy Bay they found the middle portion of a sled. Evidently Bernard had been forced to lighten up. First he had taken an axe and chopped the rear third off his fourteen-foot sled, but the pieces must have been deeply snowed over, for Castel never found them. Here was the middle third, showing at both ends that the sled had been chopped through with an axe and the shoeing then filed off.

A little west of this Castel came to a hard snowdrift with many fox tracks around and with some small fragments of caribou skin scattered over the snow. The fox had been digging a hole in the drift and underneath was evidently the caribou from which the fragments had come. Charlie digging with a shovel came upon something white and smooth, and cried to Castel that Bernard's party had not been so short of food, after all. But what he had taken for the white skin of a piece of salt pork turned out to be the shoulder of Thomsen.

When the snow had been cleared away his body was found there, lying on its side as if he had gone quietly to sleep. The face did not appear emaciated, which was one reason why they felt sure he had not died of actual starvation, and there were other proofs to the same effect. The hands were bare but this did not signify anything, for men lost in a snowstorm who struggle along till they eventually freeze to death often throw away their mittens and remove their coats. It is commonly believed that this is because they are actually warm from their exertions, but it may be that it is merely an evidence of a mind no longer sane. On one foot was the ordinary type of boot but on the other a house slipper, one of a pair that Mrs. Thomsen had made for him to bring to me as a Christmas present.

On the whole, the evidence leads me to think that Bernard and Thomsen were in a camp, probably at night and in a heavy blizzard. Thomsen had taken off his boots perhaps to dry or mend them, when some occasion arose for going out. He put on one boot and perhaps because he was sewing the other, he slipped on one of my slippers, intending merely to step outdoors. But when one goes outdoors in a blizzard the camp becomes invisible at arm's length. I have heard several stories of Eskimos who have intended to step away from the house but a yard or two but who have never found their camps again and have even frozen to death. This is probably what happened to Thomsen. When he failed to get back into the camp he probably wandered for five or ten miles before the end came. That he died a long way from the camp we infer from the fact that, although Castel spent two days in the vicinity, he was unable to find any sign of a camp.

It was not possible to bury the body of Thomsen properly, for the ground was rocky and frozen. They made for him a shallow grave, covered it with large boulders, and left word for Natkusiak's party, who had more time and more resources, to make the grave stronger and less likely to be penetrated by animals. They then pushed on to search for Bernard's body, for the tragic fate of Thomsen left little hope that Bernard could have come through. For some time they were able to see traces of him, finding the westward trail every few miles as before. They now came to our most easterly food depot and to the most incomprehensible part of the story.

We knew exactly what was in this depot. The following items were found by Castel still untouched: Sugar, 250 lbs.; syrup, 2 gallons; flour, 100 lbs., and a few pounds of beans and rice. There were plain signs that the depot had been visited on the way east and by Bernard alone going back. Either on the eastward or westward journey the following items had been removed: Prunes, 15 lbs.; pilot bread, 96 lbs.; tobacco, 34 lbs.; half a case baking powder (the remainder was left); tea, several pounds; soap, 12 lbs.; apples, 30 lbs.

Here and there along the coast Castel found tin cans which had been used as dishes in which to feed the dogs. These showed that on the west coast of Banks Island the dogs had been living on boiled rice with seal's fat, but on the north coast they had been living on boiled rice without the blubber. The most extraordinary and perhaps most tragic part of the whole story is that both at this and the other depots all the bags of sugar were unopened. The dogs were weakening from a diet of rice alone where rice and fat would have kept them in good condition. But from a dietetic point of view two and a quarter pounds of sugar are equal in food value to a pound of fat and take the place of fat acceptably in the dietary. This we have found also by experience, for dogs that will refuse to eat a strange kind of meat, as, for instance, wolf, will lick syrup greedily out of a dish that has about it the odor of seal oil or any other strong familiar smell. The dogs as we know from actual trial could have been kept in as good condition with sugar and rice as with bacon and rice or blubber and rice. The whole tragedy then appears to hinge on Bernard and Thomsen's lack of understanding of the food value of sugar.

Another twenty miles west Castel found that Captain Bernard had stopped to rest less than a hundred yards from our second depot. Here again the sugar bags were of the number called for by our inventory and had not been opened, though other food items were gone.

This second depot was at Cape Giffard. West of that point the land becomes gradually lower and the water more shallow inshore so that the rough ice does not approach so closely to the beach. It was no longer possible to assume that Captain Bernard had followed the beach. There was nothing to prevent him from traveling overland, nor, indeed, anything to prevent him from traveling half a mile or a mile offshore. Castel advanced slowly, searching on the land and on the ice, but there was no longer any sure guide as to where the trail would be and he failed to find it again.

With his extreme conscientiousness and loyalty Bernard was probably still dragging with him my letter mail. We shall perhaps never know where he died nor whether it was on the land or on the sea ice. It seems certain that he never got as far back as the *Star,* for there was no evidence of a return visit, although plenty of evidence of their having been there on the way north.

I got the story up to this point from the verbal accounts of Binder and Masik as to what Castel and Charlie had told them, and the main outline of it from a written report of Castel's. There is only one thing to add of a later date. Natkusiak's party spent several days in making as secure a grave as they could for Thomsen. They searched carefully for Bernard on the way west but found no traces except those which Castel had previously found. They have since spent two years around the northwest corner of Banks Island, for they proved unable to launch the *Star* and have been using her as a trapping base. During this time they have hunted caribou here and there over the land and have examined the islands and coastline again and again, so that it seems most likely that Captain Bernard died on the sea ice, and that his body with the mail and whatever else he had with him will never be recovered.

Thus died two of the expedition's best men. With Storkerson and Wilkins, Bernard made the third of those who contributed most to our northern section. Any one is wrong who thinks that I have criticized Bernard by pointing out his peculiar attitude towards orders. I have merely made clear how this tragedy could happen in spite of precautionary instructions which are matters of record. After all, there is often good reason in the Arctic for disobeying orders, for conditions may change so fundamentally that the commander who issued them might desire to alter or even reverse them were he present. Loyalty and good intentions are the main things, and I never knew a man who had more of either of these than Captain Bernard. He and Thomsen were lost in a brave attempt to do what they thought was best and most conducive to the success of the expedition.

## CHAPTER LXI

### THE DESTRUCTION OF THE MARY SACHS

CASTEL and Charlie arrived at Cape Kellett in June to find there Binder and Masik.

The Kilian brothers, sent by Captain Gonzales to Kellett early in November with the message to Thomsen suggesting that he make his journey to Melville Island by way of the *Bear* and Prince of Wales Straits, arrived there to find none but Eskimos, and the report that in two or three weeks Captain Bernard would be back from Melville Island. They decided to wait for his return, but week by week the wait grew longer, and the delay dragged on into midwinter. When eventually they returned to the *Bear* they had begun to fear some tragedy, although they appear to have assumed that this would have been on the return journey. When they went to the *Bear* they took with them the Eskimos, so that Castel now found at the camp only the two white men.

Castel was now the senior officer at Kellett. He accordingly opened my letter of instructions to Captain Bernard and proceeded to carry them out to the best of his ability. I have already mentioned what they were: the *Sachs* was to be repaired and launched; she would then wait for us as late as seemed consistent with her ability to get out to the Pacific. I wanted the main body of the expedition to get home that fall so that the men might be discharged and the great expense of the expedition ended. I have already outlined how I expected to return with my own party to civilization in case we were unable to reach Kellett before the close of navigation.

Castel's party was ideally adapted to the work in hand. Both he and Masik are sailors of the old type who understand not only how to handle a ship but how to repair hold, sails and rigging. The ship was, of course, very dry after being several seasons out of water, but she was in excellent condition and when the seams that were wide open because of the dryness had once been properly caulked, the swelling of the planks upon launching would make her exceptionally tight. When the major repairs had been made, she was scraped and painted and her rigging thoroughly overhauled.

The sails and rigging were found either in good condition or capable of satisfactory repair. Binder knew how to run an engine but was primarily a mechanic and admirably adapted for making the repairs. We have mentioned that one of the propeller shafts was broken when Wilkins was bringing the ship from Bathurst to Kellett in 1914. Naturally the propeller was lost. There was a spare shaft which Binder was able to put in and a spare propeller, not very satisfactory, however, as it was rather too large for the power of the engine.

In the first days of August everything was ready for launching and they began to shove the *Sachs* off gradually with jack screws. On the evening of the sixth she was really afloat although her bow still rested on the beach. At first she leaked rapidly, as was expected on account of her excessively dry condition, but inside of two days the seams had closed up so that she had to be pumped only four minutes per hour. This was a happy contrast with her condition when Wilkins brought her north, for his report said that on that voyage she had to be pumped forty minutes per hour. In fact, there appears to have been little water that came in after the first day except some through the stuffing boxes and a little in the bow. That there was a leak in the bow was a minor slip. They had had occasion to nail some blocks to the outside of the ship and had done this with spikes so large that they had penetrated the planking. The spike holes they had forgotten to plug up and it was through them the water was coming in. However, a leak of four minutes per hour will never prevent a ship from sailing where she likes.

On the evening of the sixth the launching was practically completed and the men were rejoicing that their months of hard work had come to so successful a close. Next day when the vessel was fully afloat they intended to go under power three miles east to Baur Harbor and stay until it was time to sail. Had the engines not been available they could have sailed her to Baur Harbor, and even without sails she could have been "tracked" with a rope along the sandy beach.

Castel's intention when the ship was safe in Baur Harbor was to leave one man aboard, to pump if necessary and to take care of her generally, while he went with the other two men down to the tip of the sandspit and began a survey with soundings of the bay behind Kellett with a view to ascertaining whether there might be a harbor suitable for big ships. Baur Harbor in 1917 would not admit a vessel of more than ten feet draft (the *Sachs* drew only six and a half) and the entrance was such that it might be rendered deeper or shallower any year by ice action—an unsafe place to rely on for more than one year at a time. The survey of the possible harbor behind Kellett would complete the map of the west coast of Banks Island undertaken by Castel in connection with the search for Thomsen.

At this stage the *Bear* arrived on the scene and we must now shift the story to her. In order to do this I must go back to the time when Storkerson arrived at the *Bear's* winter quarters in Walker Bay with instructions from me that Captain Gonzales was to outfit him for the exploration of Victoria Island.

On presentation of these, Gonzales had not refused to outfit Storkerson but had warned him that he intended to sail away from Walker Bay on the first of August, and if Storkerson and his party had not arrived from their survey he would leave them behind. He also told the men that, while he would not dissuade any of them from going with Storkerson, he warned them that any who did so were doing it at their own risk, for he thought Storkerson might tarry too long at the surveying in which case they would have to spend the year in Victoria Island, for they would find the ship gone when they came back. Eventually two of the men, Martin Kilian and Gumaer, went with Storkerson, but it was agreed before they started that Storkerson would send them back on a certain date whether the survey had been completed or not. This date was placed so early that it seemed from the start that the survey was doomed to be a failure.

Still, Storkerson started and hoped for the best. When they had been gone several days and it became evident that the survey would take longer than the time allowed by the arrangement with Gonzales, both men volunteered to stay by Storkerson, taking chances on being marooned. This cheered him up for several days, but then Gumaer had a change of heart and asked to be allowed to return as originally promised. Martin Kilian stuck creditably to his guns and joined Storkerson in urging Gumaer not to go back. They were now on the north coast of Victoria Island, the spring thaws had come and the overland journey to the *Bear* would be dangerous especially for a man traveling alone. But all arguments were of no avail and Storkerson had to fulfill his agreement by handing over one of his sleds and dog teams. He cautioned Gumaer carefully on the proper route to take, urging him to go by the coast. Gumaer, however, preferred his own ideas and tried to strike directly overland. The rivers were open and in trying to cross one of them his dog team was drowned, or at any rate lost—there seems to be dispute on this minor point. The main thing is that Gumaer got back to the ship, although only after the greatest difficulties. To me it has always appeared a marvel that he did get back. From that point of view it was a very creditable performance.

Storkerson and Kilian pressed on with the survey. How near they came to finishing it can be seen by a glance at the present map of Victoria Island. They still expected that Gonzales would sail away on the day he had threatened and they were doing the survey on a few extra days which, according to their calculations, intervened between the date set by Gonzales for the beginning of the return and the time actually necessary. In other words, they expected to travel back about twice as fast as Gonzales had estimated. In this they succeeded. They took their sleds to the south end of Collinson Inlet and proceeded with pack dogs overland. By throwing away nearly everything they were able to travel overland much faster than we have ever done in summer—almost three times as fast. Still, it was two days past the assigned date when they got to Walker Bay. They fully expected the *Bear* to be gone but found Gonzales had changed his mind about marooning them.

On leaving winter quarters the *Bear* tried to get to Kellett, which was according to instructions, except that I had not looked forward to so early a start. It was found that ice blocked the way and an attempt was then made to reach Cape Bathurst to land dogs and passengers (the Eskimo families). This was also according to instructions. But the ice proved solid towards Cape Bathurst, so they turned again towards Kellett and reached there on the seventh of August.

Here they found the *Sachs* three-quarters in the water. Castel and his men had been able to put her in such condition that she was better fitted for a voyage than she had been when we bought her in Nome. Castel expected to be through mapping the bay behind Kellett between the 20th and 25th of August, which he hoped would give my party ample time to arrive. It was his intention to set sail with the *Sachs* about the 25th if I had not come, judging this to be in the spirit of my plans.

At first Gonzales seemed in agreement with Castel's ideas. The *Bear* gave a hand in pulling the *Sachs* off the beach. Her engines were found to be not in first-class order but they could be put in condition, according to the opinion of her engineer, Binder. Later

Captain Gonzales changed his mind, told Castel to come aboard the *Polar Bear* with all his men, and announced that he was going to leave the *Sachs* behind. Gonzales seems to have consulted several of his men, some of whom agreed that the ship should be left behind, their thought being that she would be put in Baur Harbor and several men left with her to keep her in condition. Upon my arrival these men together with my party would make a sufficient crew for sailing her out. This would have been a satisfactory arrangement. It appears that several of the men, on being asked by Gonzales, favored his plan of sailing away on the *Bear* and leaving the *Sachs* for me, but that every one of them supposed she would be left in a seaworthy condition so I could use her to carry my party home should I arrive at Kellett. None of them conceived the possibility of the destruction of the ship nor understood the motive of it when that startling event had happened.

Storkerson's report to me says that when the *Sachs* was put broadside on the beach he was standing on the *Bear* beside the first officer, Seymour, who expressed the opinion that it was "a damn shame" to leave a ship in a dangerous position on an open beach when in an hour she could have been taken under her own power or in tow into a safe harbor three miles away. Later they were still more astonished when, without warning to them, they saw the foremast of the *Sachs* come crashing down. The mast was sawed up and taken aboard the *Bear* as wood for the galley stove. As to this, the steward, Levi, said that it was the finest firewood he ever used but that he could have done without it. The yards of the *Sachs* were also sawed up and carried off; the sails were taken away, as well as the engine-room tools and most of the fuel oil intended for the engines.

There have been several conjectures as to the motives that led to the destruction of the *Sachs*. It appears to me most likely that when Captain Gonzales had leisure to think about his procedure of the previous year, he became less certain that his position would be sustained by the Government at Ottawa. Naturally enough, he might worry about this. When he came to Kellett and found himself the senior officer with me away, it occurred to him that if he could sail from Kellett before I arrived and if he left no means behind for me to get out, it would not be possible for me to get over to the mainland by sled until the middle of the winter nor could I get to a telegraph office, such as Dawson, before perhaps March. He might then reasonably hope that if he sailed out, getting to Victoria in September, he could make a satisfactory explanation by showing my orders according to which he was senior officer and according to which he was to take the *Bear* to the Pacific the fall of 1917.

He appears to have relied especially on the paragraph which read: "It is impossible to give specific instructions to cover every eventuality, so I leave it to you to do what is best in your judgment in any event not covered by these instructions." He would report to the Government that he had followed instructions in so far as they were definite, and that he had been authorized by the quoted paragraph to do whatever other things he had done. If he could not justify the destruction of a seaworthy ship, he could claim the *Sachs* had not been seaworthy, and then try to justify her destruction. If he could secure his pay and get away he might hope to lose himself so as not to be prosecuted, especially in the excitement and comparative disorganization resulting from the war. It is improbable that he would have succeeded in this, for several of the men and especially Hadley, Storkerson and Castel, would have reported the facts.

After the mast had been chopped out of the *Sachs* or possibly before, Gonzales made an arrangement with Binder and Masik that they were to be in charge of the wreck. He told them to break her up as soon as possible and build a house. He gave them a stock of groceries, ammunition, traps and the like, and authorized them to use these trapping foxes. This outfit would pay them for remaining in charge of a small depot that was being left for me, and the furs secured would be their property. This was a very advantageous arrangement for men wanting to trap as these did, and while they did not differ from the majority of the men in thinking the destruction of the ship extraordinary and unjustified, still they recognized in the event a windfall for themselves. They told me, and Castel said the same later, that they felt especially keenly the destruction of the vessel in view of the faithful and long-continued work they had devoted to putting her in seaworthy condition. Written statements from all of Castel's party, himself, Charlie, Binder and Masik, say that they considered the ship seaworthy, that they would have been glad to sail out in her, and that they told Captain Gonzales so. Some of them explained further that they were anxious to wait at Kellett until the season showed that my arrival that year had become improbable.

This was the situation that met me after a walk of twenty-eight hours. Truly the first and strongest feeling was wonder that these picturesque doings could have happened outside the covers of a book for boys. I was unable to understand the temperament or motives that would lead to such things, but the situation for us was plain.

The outfit that had been left for us was conspicuous for the want of certain things. There were no sledges or means of travel, so that we were as nearly prevented as possible from leaving Banks Island. Indeed it would have been necessary for us, had we desired to leave by sled, first to go back overland with pack dogs to the northeast corner and pick up the sleds we had left there, bringing them home on the first snow. This would have required two months of tedious work. Neither had primus stoves been left nor suitable equipment for traveling, but in this respect we could have made out somehow. There were no writing materials except those we had brought with us overland, and scarcely any books to read. All the best had been carried away.

My companions with the dogs arrived three days after me. The Stevensonian romance of being deserted and marooned appealed far less to them than to me, and feeling ran high for a while, with many remarks of all they would do and say when they got out to civilization.

We laid plans at once. We would start in two or three weeks back to Point Russell to fetch the sleds. We would kill the necessary number of caribou for food and clothing in the fall, and probably in February would cross over to Cape Bathurst and thence to the Mounted Police post at Fort Macpherson and over the mountains to Dawson. What worried the boys most in this connection was that obviously we were going to be too late. If the *Bear* had luck and got out, her men would be paid off and gone. In our bitterness of feeling we assumed for the moment that most of the men had been involved with Gonzales in the destruction of the *Sachs* and our marooning on Banks Island, except Storkerson, Hadley and Castel. From them I had received letters through Binder stating their unequivocal disapproval of what had been done and saying that they had protested vainly against it.

As an alternative to this plan we had but one hope—the possible arrival of Captain Pedersen with the *Herman* to pick up the catch of furs secured by his natives forty miles southeast of us. I knew pretty well that if Captain Pedersen got that near he would come to Kellett to see how things stood. But to make everything doubly sure I asked Masik to go down to the *Herman* camp with a message for him.

It took me far less time to grasp the situation than it does to explain it in this book, as is shown by the fact that Masik was on his way in a rowboat within six hours after I arrived at Kellett, although the first hour had been occupied by him in cooking me a supper. He had a clumsy boat to row and he had not slept for at least fifteen hours; still he expected to make the whole forty miles before sleeping, and did so—I learned later that he had a head wind part of the way. I saw at once that Masik was of that admirable type who never conjure up imaginary difficulties and who go about any important thing with directness and despatch. He returned, after a nap and a bit of rest, with the news that the *Herman* had not arrived although the Eskimos expected Captain Pedersen, according to the arrangement of the previous year.

There was hope, then, for the season was not yet late. But the prospects grew less each day. In the neighborhood of Banks Island there was no ice so far as we could see from the highest hills, but apparently there must be ice to the south, for nothing but the most difficult conditions would keep away a skillful ice navigator like Pedersen with such a competent ship as the old whaler *Herman*.

# CHAPTER LXII

## THE ADVENTURES OF THE AUTUMN 1917

THE morning of August 26th a ship came in sight. It was not the *Herman* but Crawford and Wittenberg's *Challenge.* I knew Crawford pretty well after years of association and he had not been ashore long when everything had been cleared up between us and was frankly understood. Crawford knew the situation aboard the *Bear* much better than I. He said that on the basis of his diagnosis of it he had concluded that "something was going to drop." He knew the *Bear* had a depot in Prince of Wales Straits but imagined that she would be in too much of a hurry to get to the Pacific to stop and pick this up. Accordingly, he and Wittenberg had decided they might as well have it, otherwise it would be destroyed by Eskimos who would not know how to utilize a quarter of it. But this year the ice conditions in Prince of Wales Straits had been different from the year before and, although the *Challenge* had tried to make her way to the depot, she had not been able to do so.

They had then decided to make for Kellett, thinking that they might find there a deal of abandoned stores. If they were really abandoned they would belong to the *Challenge* under the laws of salvage, and anyway they felt sure that the Government would eventually be willing to sell them for a reasonable price. They had assumed that I would not be on Banks Island, possibly because my party might have been lost out on the ice, and possibly because we might have decided to come home by another route. When they found us in possession they were obviously delighted. Not only were their feelings towards us friendly but it gave them a chance to make a good trade. Our supplies and the wreck of the *Sachs,* including her engines, were things which they could turn to considerable use, while to us they were of no value. The *Challenge,* on the other hand, gave us our only chance of getting out of the country. They were in a fine position for making a favorable sale and, although I knew the *Challenge* to be unsound, I was happy to buy her for six thousand dollars, giving to boot all our supplies on Banks Island.

Inside of twenty-four hours the bargain was completed, Crawford's men were ashore and ours on board. Mr. Leo Wittenberg, part owner with Crawford, decided to come out with us as our guest.

Masik was sailing master and Binder engineer. The rest of us were the crew, men of all work. We had a beautiful, sunshiny day and a fair breeze. To travel west as fast as possible we took a great circle course for Herschel Island, intending to omit the customary call at the Hudson's Bay trading station at Cape Bathurst (the Baillie Islands). But we had not been on the way many hours when we came to thick ice, the edge of which ran northwest and southeast. There was no sense in going into such compact ice, especially with a weak ship like the *Challenge,* so we turned a little more than a right angle and followed the edge of the ice southeast.

The next morning, twenty-seven hours after leaving Kellett, we had another evidence that dramatic situations may arise outside the brains of novelists. Out of the fog came a clear spell, and there in front of us, two or three miles away, was the *Bear.*

The ships stood towards each other, our men tense to the situation, and they unaware. It seemed to me wise not to come on deck until the ships should be at close quarters, and so I went to the cabin. Meantime Mr. Wittenberg, with mixed motives of a boyish prank and the idea that the *Bear* might turn tail and run, hoisted a distress signal. He had mentioned doing so to me, but I think I made no answer beyond saying that I did not see why we should. It is the custom in these waters for ships to speak each other, and the *Bear,* not suspecting my being aboard, would have come up to us even without the signal. When she came within speaking distance some of our men hailed the *Bear* and told them that I was on the *Challenge* and wanted the *Bear* to tie up to some nearby solid ice so that I could come aboard.

Later from the men aboard the *Bear* I heard various stories of how the surprise struck everybody. I could well imagine it and so, indeed, can the reader. The first thing that actually happened was that after the two ships had tied up Captain Gonzales came aboard the *Challenge* with an explanation of all that had taken place. Essentially it amounted to this:

He considered himself to know on the basis of what I had said, as well as on the written instructions, that my main concern was to get the expedition safe home in 1917. He had accordingly given

Storkerson strict orders that he must not through the extensiveness of his spring explorations delay the sailing of the *Bear*, telling him that the ship would start as soon as navigation conditions allowed. Later when he got to Kellett he had inspected the *Sachs*, found her unsound, and had on the recommendation of his officers decided to destroy her. His crew also was inadequate for handling the *Bear* and he needed Castel's men aboard. In explanation of why he had chopped out the mast and put the ship on the beach he said that his galley stove had been short of fuel, that the *Sachs* was no good, anyhow, and that he did not have the time—an hour or two—to tow the *Sachs* into Baur Harbor. Furthermore, he considered that Binder and Masik would have things more important to do than to keep pumping the ship to keep her afloat.

Captain Gonzales gave me the names of four of his officers with whom he said he had consulted and who had recommended the destruction of the *Sachs*. Three of these men denied the story entirely but the fourth said that he had recommended leaving the *Sachs*, meaning, however, not her destruction but that she should be towed to Baur Harbor and anchored there in charge of the two who were being left behind. As I have mentioned, the suggestion of this officer would have met with my approval. I should have liked nothing better on arriving at Kellett than to find the *Bear* safely on her way and the *Sachs* waiting for us with an adequate crew, Castel, Andersen, Binder and Masik. Even with just Binder and Masik we should have been all right, for the *Sachs* was no more difficult to sail than the *Challenge*, needing no larger crew.

The engineer of the *Bear*, Herman Kilian, stated that he had told Captain Gonzales that the engines of the *Sachs* were not in good condition. He had not, however, recommended the destruction of the ship. The condition of the engines was in a sense not very material. It is a great convenience to have power, but during two or three decades of whaling many a sailing ship has gone from Kellett safely to the Pacific without the use of engines. Indeed, this entire part of the Arctic, so far as it was explored before our time, is known to us almost solely through the work of men who came up in sailing ships which usually brought them safe home again.

I now took personal charge of the *Bear*, transferring Castel to the command of the *Challenge*. After some delays and troubles with the ice, both ships proceeded to the harbor at Cape Bathurst where Captain Gonzales left the expedition. We also put off several of our other men who desired to become trappers there, Pete Lopez, Jim Fiji, and some Eskimos.

Under the pressure of stating many things in a book that continually tries to become too long I have given insufficient space to many of our good and useful men. Of these, few were more admirable and none more popular than Jim Fiji, or James Asasela, as he writes it on rare occasions.

When the World's Fair was held in 1893 one of the exhibits was a young man who had grown to maturity in the Samoa Islands and had been brought to Chicago as a part of the exhibit of "native races." This young man was James Asasela. When the Fair was over he drifted to San Francisco with an idea of getting back to the Samoas. He could not speak much English, so he went down to the water front to see if he could find a ship that looked as if it would take him home. He saw a small sailing ship that had several "Kanakas" aboard, natives of the Hawaii Islands. He could not speak to these Hawaiians but he knew what people and country they belonged to, so he went to the officers of this ship and asked for a job, for he thought they were sailing for the Hawaii Islands. Two or three months later he found himself in the Arctic. Jim Fiji from the tropics now had to spend the winter with a whaler at Herschel Island, two hundred miles north of the arctic circle, on the north coast of Canada. He found it hard, for he did not know how to take care of himself in the cold. He froze his face and his fingers and shivered and was miserable, and he has told me that he would have given anything to be out of it and home. But it was a three-years' voyage, and during the next two years he learned how to clothe himself properly and how to protect himself from frost, and he liked the last year so well that when the vessel got down to San Francisco he immediately shipped on another whaler to go north again. And at the end of this three-year voyage he liked the north so well that when the ship turned home he asked permission of the captain to remain behind.

Jim Fiji had lived in that country ever since, trapping and occasionally working for whalers or traders, and he worked three years for us on this expedition. I have known him since 1906 as one of the finest men in the North, and consider him one of my good friends. He has been industrious and frugal, has caught many foxes, has sold his furs at favorable prices, and now he has money in the bank. The amount is a subject on which he is reticent, for he has in that respect the instincts of a miser. He will give you any food or clothing or other articles he has, but when anything has once been turned into money it never gets away from him. Some say he is worth ten thousand dollars and others say forty thousand.

In 1917 his hair had turned nearly white and he was getting to be an old man. Although I am a great believer in the North it struck me one day that it might be no bad speculation for Jim Fiji to go back with some of his riches to the Samoa Islands and settle down. I suggested to him that a good thing to do would be to go south with us to San Francisco, put most of his money into Liberty Bonds, take a few thousand dollars to the Samoas and buy an estate on which he could live. This idea struck him very favorably and thereafter we had many talks about what he was going to do. He told me how you could get a man down there to work for you all day for five cents, and he had great visions of what he was going to do as a landlord. Among other things, I was to come and visit him some time down there. He knew how fond I was of the Eskimo foods and he described in detail the peculiar Samoan foods which he was going to give me to see how I liked them.

At the end of the expedition I came east to Ottawa and New York and Jim Fiji went to San Francisco. Some months later I went out to San Francisco and the day after I got there Jim Fiji called on me. I was surprised to find him still there, but he explained that when he got there he heard that one of his cousins was on the way from the Samoas and so he thought he would await his arrival before starting for home. When this cousin arrived he told him, among other things, that wages had gone up and that you no longer were able to hire a man for five cents per day. Various other things had changed for the worse, but the main thing that worried Jim was that he found he could not stand very well the heat of San Francisco and, as he imagined that the Samoas would be even hotter, he had decided that he did not care to go back after all and his intentions now were to buy another trapping outfit and go to the Arctic again.

This is what he has done. In the spring of 1919 he was taken north by Captain Pedersen of the *Herman,* and Captain Pedersen tells me he landed Jim on Cape Bathurst, the second most northerly point on the Canadian mainland. He expects to live there the rest of his life.

There was nothing before us now except to get out into the Pacific before the ice stopped us somewhere on the north coast of Alaska. Some of our men were very glad of the prospect of getting out; some were willing or anxious to turn from exploratory work to the more lucrative occupations of trapping and trading; but a few were genuinely reluctant and urged me to continue another year. But these were merely the same type of proposals which I had vetoed when Noice made them in Melville Island. I did consider staying for a year with just my three men and two teams, for the expense would have been little and the interest considerable. We had already maintained ourselves a year and a half away from useful contact with our ships, and extending this period by another year would have emphasized further what our whole work goes to emphasize; that men who understand conditions can travel almost if not quite where they like and stay as long as they will in the Arctic with safety and comfort. It had always been my intention to get the expensive ships and their large crews off the payroll of the expedition, and I saw no reason now for keeping the ship another year. Neither did I think that the Government would approve of our doing so under war conditions, for we had the news at Cape Bathurst that the fighting was continuous on every front, the resources of every nation strained and the issue still doubtful. In fact, it was only then that we realized that the struggle was likely to continue indefinitely. Before this time we had always supposed that each next arrival of news would tell that it was over. This was our third news of the war. The other two occasions were when Captain Lane broke it to us at Kellett in August, 1915, and when Captain Gonzales brought to Melville Island the spring of 1917 what news the *Challenge* had given him the previous fall.

Noice was the most enthusiastic of all about continuing. When he found there was no hope of our staying he thought of the plan of buying the *Challenge,* which he knew would be of no further use to us.

There was at Cape Bathurst an old friend of mine, A. A. Carroll, whom I had first met on my second journey down the Mackenzie River in 1908, when he was intending to prospect for gold on the Liard and elsewhere west of the Mackenzie. He was now associated with another friend, Colonel J. K. Cornwall, of Edmonton, who since long before my time has been one of the most prominent figures in the "North" as that term is understood in central Canada —the Mackenzie and Peace River basins. Cornwall was now head of a large fur trading company which Carroll was representing on a sort of trade reconnoitering journey to Coronation Gulf. I was able to tell Noice that Carroll would probably be an agreeable and dependable associate, and the upshot was that Noice asked to be discharged from the employ of the expedition and that Binder and Carroll formed a partnership with him for the purchase of the *Challenge* for this eastern venture. Binder and Carroll had their eyes on fur and a fortune, but Noice was eager to complete the short piece of work left undone by Storkerson in the mapping of northeastern Victoria Island. He was hoping to reach Coronation Gulf by ship, then to go northeastward across Victoria Island with probably one sled and one or two companions, depending on the rifle, according to our system. This would be especially interesting because his route would lie through the vicinity where more than a hundred men of the *Erebus* and *Terror* had starved to death (about 1847).

The adventures of Harold Noice on this enterprise have not yet been brought down to date when this book goes to press. The first year his ship was wrecked in winter quarters on the mainland coast of Amundsen Gulf, and this appears to have dissolved the partnership arrangement. The details of what follows are vague, for even Noice's parents have had but scant information from him, one letter a year, repetitions very much one of the other. He has been traveling around mostly with Eskimo companions. has visited eastern Victoria Island though we do not yet know whether he has completed the survey, and has prospered and had a good time. As nearly as can be judged from his letters, he has spent most of one year in southeastern Victoria Island. If he was on the very southeast coast he must have been within sight of where the *Erebus* and *Terror* were held fast in the ice before their crews left them upon the march which led to their death. Much has been written and inferred of the hostility and desolation of this region. But any one who knows Noice will know that he means exactly what he says in a letter to his mother: "Living off the country is easy if only one makes hay while the sun shines, killing plenty of seals in the spring of the year for the next year's fuel supply, killing plenty of deer in the summer for the winter's clothing, and in the fall laying in an abundant supply of fine, fat deer meat for the winter's grubstake."

I have had friendly controversies with people who imagine that our success in "living off the country" is due to some special ability of mine as a hunter which might not be present in some one else. I have always denied this and maintained that if we deserve credit it is for developing a system and not for any individual prowess. Beyond temperament, I have no special qualifications for the work, nor has Storkerson, nor any of the other men who helped me. Nor has Noice any special qualifications for it except the imagination to see its value and interest. There are few men in civilized occupations to-day who are finding their work as congenial or who will tell you with equal enthusiasm that they have had a bully time. Even were he to bring home no surveys nor scientific information, properly so called, he would still be a pioneer, a less sanguinary but comparably useful Daniel Boone, opening new lands to the frontiersmen who bring commercial development in the wake of the pioneer. There may no longer be a Far West but there is a Far North with the same nebulous and glamorous future within which shall rise stately cities and empires of productivity.

We got to Herschel Island September 7th, 1917. Both there and at Cape Bathurst we had heard much talk about how bad the ice conditions had been, and most people seemed sure that we could not get out this season. In case this should prove true we took aboard from the Police storehouse certain supplies belonging to the expedition and purchased enough more from the Hudson's Bay Company store to make about half enough food should we be compelled to winter. We paid off at Herschel Island most of our Eskimos and also William Seymour, the first officer of the *Bear*, who intended to spend the winter there. Indeed, Mr. Seymour lives in the Arctic rather than anywhere else. We now had Hadley for master and Castel and Masik for first and second officers. Storkerson, who had for a long time been in a sense our most important man, never had an official position aboard the ships, because the work of the ships seemed to me entirely secondary to that of sledge travel. He is an excellent sailor, well fitted for a ship's command, and this was one of my serious errors in tactics, for I can now see that many things would have gone better had I given him an official (although to my mind an empty) rank corresponding to his ability and his usefulness.

After two or three days at Herschel Island we proceeded to the trading station of the H. Liebes and Company, just west of the International Boundary, a post under the charge of Thomas Gordon, one of the best known men in the North and for many years a resident of the vicinity of Point Barrow.*

We had heard something of the movements of the *Herman* that summer but Gordon gave the story more fully. She had tried her best to force a way through the ice to Banks Island for the purpose of connecting with their Eskimo trappers and also to see how we were progressing at Cape Kellett, but she had been unable to penetrate more than a few miles northeast of Cape Bathurst. Impressed with the necessity of hurrying back if he did not want to be frozen in for the winter, Captain Pedersen had given up some of his plans and turned west. He had been at Mr. Gordon's place a week before our arrival and had been doubtful when he left there of his ability to get out, for the ice was heavy and close to the land. Mr. Gordon was of the opinion that the chances were against us now. He did not have enough of a trading outfit to satisfy all his Eskimo customers, from whom he could get a much better price than from us, as he dealt with them in terms of furs rather than money, so it was in the nature of a favor that he sold us some additional supplies when we ourselves began to doubt that we should get out.

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* For several references to Mr. Gordon, see index of "My Life With the Eskimo."

But as we proceeded west the conditions became more favorable. Still, there was much ice about when on the evening of September 13th we arrived at a harbor at the east end of Barter Island. This is the only real harbor known to me on the coast between Herschel Island and Point Barrow, and as the night promised to be stormy and very dark, our officers advised tying up for the six or eight hours of darkness, to proceed again early in the morning.

That night turned out to be one of the turning points in the expedition. I was sleeping in the wheel house on deck. Captain Hadley, who aimed to be always on deck when the ship was under way, was sleeping below in his cabin, and it was the first officer's watch. In the evening the wind was blowing hard from the northeast. It was cloudy and dark. About the time that Castel first noticed daylight in the sky the wind suddenly turned to southwest and then blew as hard as before. Castel noticed that a strong current began running through the harbor to the northeast. He came and woke me and I told him to have the Captain called immediately. It was perhaps two minutes later and the Captain was just coming on deck when the ship bumped bottom. We had been lying with four or five feet of water under our keel and ample room to swing in any direction the full length of the cable. But the current and wind together had suddenly become so strong that we dragged anchor, and it was so dark that no one realized what was happening until our stern struck a sandbank. A moment later we were broadside and helpless. We got out all our anchors, carried them in a boat to windward and hove on the windlass, knowing very well, however, that nothing was going to happen, for it was beyond our power to straighten the ship up and get her nose into the wind. The serious feature was that a southwest gale of the sort that was now blowing is always accompanied by a rise in sea level of four feet or more. We could not heave the ship's nose into the wind until it slackened materially and the current as well, but the slackening of wind and current would mean a drop in water level of four or five feet, leaving the ship flat on her side on a mud bank.*

That is exactly what happened. At the end of the gale there was so little water around us that we could not have floated the ship off, even if we had removed her entire cargo. For one thing, she had more depth aft than anywhere else and much of it was due to the fuel oil in her tanks. Her stern could not be lightened without emptying the oil out and we had no containers. Had we pumped it into the ocean we should have been compelled to rely later entirely on sails for motive power, and the *Bear*, with all her many good qualities, is not a good sailing vessel. It was doubtful whether we could get off even with such heroic measures as throwing away gasoline. Consultation with Storkerson, Hadley and Castel ended in the conclusion that the only thing we could do was to lighten the ship, keep her anchors off to windward and wait for the next southwest gale, which might be any number of weeks away. The rise of tide with a sou'wester often comes several hours ahead of the gale. It was this we would watch for—high water unaccompanied as yet by wind that would interfere with us.

The season was now so late that the chances were against our getting the ship afloat in time to reach the Pacific. We were in the best harbor on the coast and if we had to stay at all we might as well stay in this one. And if we had to stay we had better try to do something useful. Plans were soon made, for our situation was convenient for a thing I had long wanted to do.

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*See *post,* p 740, for account of how a similar misfortune befell the *Alaska* at Cape Bathurst the fall of 1914.

# CHAPTER LXIII

## THE RETURN AFTER THE FIFTH WINTER

IN 1896 Nansen started on a voyage that was a new departure in the method of polar exploration. On the basis of sound and brilliant reasoning, he had concluded that if a ship were put in the ice near the north coast of Alaska or the north coast of eastern Siberia, it would float across the polar basin, coming out into the north Atlantic in the vicinity of Spitsbergen, where huge quantities of ice are known to be continually moving south to be melted in the Gulf Stream. Nansen made a great step forward with this plan in the methods of polar exploration and carried it out successfully.

In 1879 Lieutenant de Long's *Jeannette* was caught in the ice in the vicinity of Wrangel Island and carried northwestward until she was crushed north of the New Siberian Islands. It was in the vicinity where the *Jeannette* was lost that Nansen put the *Fram* into the ice, so that when the cruise of the *Jeannette* and the cruise of the *Fram* are both plotted on a circumpolar map they make nearly a continuous curved line from Wrangel Island to Spitsbergen. In the fall of 1913 the *Karluk* had been set fast in the ice not far northwest from Barter Island where we now were and had been carried to the vicinity of Wrangel Island before she was broken by the ice. If her drift is plotted on the same circumpolar chart with those of the *Jeannette* and *Fram*, the three make a nearly continuous line from the vicinity of Barter Island to Spitsbergen. It seems, then, that there is not much point in putting a ship into the ice anywhere on the north coast of Alaska or the north coast of Siberia, for such a ship if frozen in far enough east will duplicate first the *Karluk* drift, second the *Jeannette* drift, and third the *Fram* drift, following their route approximately. This at least seems likely to me.

Nansen's idea of drifting in a ship was that a ship would be a sort of floating boarding-house for his men, giving them a comfortable dwelling as they drifted and as they carried on such scientific work as they might find possible,—soundings, zoölogical collecting, magnetic observations, and the like. We had come to the conclusion that a party of men could be as safe and comfortable without a ship as with it, that on any ice field you will find snow for a sanitary and excellent house, and that for adequate food and fuel there will be seals and polar bears.

Apart entirely from its novelty, accomplishing such a drift without a ship has definite advantages. Any ship drift, by the very nature of the polar sea (the currents of which we know well enough to make this prediction) must duplicate in succession the drifts of the *Karluk, Jeannette* and *Fram.* The ice may be considered as a huge disk revolving about an axis not far from the Pole of Inaccessibility (and not about the geographic Pole). A ship must freeze in near the margin of this disk and must stay near the margin till the drift is finished. But a party traveling with sledges can march any convenient distance into the area of revolving ice. Their drift, if plotted on the sea bottom, would (I reasoned) form a curved line about as much nearer to the center of the ice than the ship drift as they had traveled many miles into the ice. This would enable them to cut a new swath, whereas a ship must follow the old and beaten path. Men drifting in a ship must stay by the ship unless they are willing to cut their journey short as Nansen did, or willing to "live off the country" as we do. But if willing to live off the country at all, why not refrain from the expense and bother of freezing a ship into the ice?

As compared with a party drifting in a ship, the drifting sledge party will have not only the inside track (both literally and figuratively) to begin with, but they can move when they like. In February of any year such a drifting party could leave their home on the ice floe and come ashore where they liked. One year of drifting might take them from a point two hundred miles north of our present harbor to a point somewhere west of Wrangel Island and one or two hundred miles north of the *Jeannette* course. They could then travel over the ice in February, March and April, and land perhaps late in that month or early in May near the Kolyma delta or the delta of the Lena. If the drift were continued a second year, a landing would presumably have to be made farther west.

All this was assuming a westward drift roughly parallel to the drifts of the *Karluk, Jeannette* and *Fram.* But should there be no drift, the party could come ashore in Alaska; and were the drift to the north or northeast, they could land on Banks Island, Prince Patrick Island, Borden Island or even in Greenland.

This was a plan the carrying out of which I had had in mind for several years; indeed, ever since we had found on the Martin

Point trip the abundance of animal life at sea. My intention had been to go home, publish the results of this expedition, and organize a second one for the purpose of such a drift, but now our enforced delay of a year gave opportunity for doing the thing directly and without any great expense of time or money, at least compared with the magnitude of the undertaking. Should we remain in winter quarters idle all winter, the wages of the men would go on and food would have to be provided for them just as if they were working hard and usefully. The party that would do the actual drifting would not be more than five men, and the ship with the rest of her company could proceed home the following summer, with enough crew still to man her satisfactorily.

We had sold most of our dogs and disposed of much of the gear needed for exploration. But Mr. Gordon at Demarcation Point and Mr. Harding at Herschel Island had supplies to sell in the way of iron and hardwood that would enable us to build some good sledges. Ole Andreasen was now in charge of a trading post at Shingle Point and I thought it likely that a man with his experience would have for his own use, if not to sell, some good dogs, sledges and primus stoves. And east of there lay the Mackenzie delta where I had previously purchased the best dogs we have ever had, and where I felt sure I could get new ones. All the preparations except the purchase of the dogs and sledge materials would be looked after at the winter base. Our party had fortunately been augmented at Herschel Island by Anthony Shannon who was a competent worker in metals, and Peter Donohue who was an excellent carpenter, both former members of the crew of the *Challenge*. When I came aboard the *Bear* I had found them as passengers on the way out to Nome.

Although this projected journey was one of the most interesting and important that the expedition had undertaken, I must cover the preparations for it in a few paragraphs. As soon as the ice was thick enough for sledge travel, Storkerson and I with several teams proceeded east along the coast. At Gordon's we were assured of coöperation and were able to secure one good sledge. At Herschel Island the Mounted Police detachment was under the command of Inspector Tupper, a grandson of the great Sir Charles Tupper, one of the makers of Canadian history. As always, the Police would do what they could to help, and Mr. Harding for the Hudson's Bay Company, equally friendly, had moderately good sledge materials for our needs. Storkerson did not go farther but devoted himself to freighting various supplies from Herschel Island

and Demarcation Point to Barter Island, where every one worked hard and faithfully all winter. From Herschel Island I went down to Shingle Point, where Ole Andreasen was not only anxious to help but also inclined to want to become a member of our exploratory party. In the delta and at Fort Macpherson I was able to buy several good dogs and many ordinary ones, so that eventually our outfit of sledges and dogs became far the best that we had on the expedition.

The prospects were excellent when the first week of January I had finished all purchases of dogs, had engaged some Eskimos to help in the early stages of the journey, and was proceeding westward from the delta to Herschel Island. But, as often before, these bright prospects were to be darkened and this time through a new cause. During the years we had been isolated from people we had been mercifully free from contagious "colds." But we had been infected as soon as we reached Cape Bathurst and repeatedly during the fall we "caught cold" afresh from coming to some new settlement of whites or Eskimos. I caught one of these colds while at the house of Mr. Kenneth Stewart, the Hudson's Bay Company's trader in the delta, and while traveling north to the coast and then west I began to feel more and more indisposed. At Shingle Point I remained two or three days visiting Ole, for there was as yet no hurry, with Storkerson and Hadley carrying on the preparations adequately at the *Bear*. The start was to be not actually from the ship but from Cross Island, about four or five days' journey to the westward. Here we had a hunting camp under the command of Castel for the purpose of securing seals for dog feed, and I felt equally at ease about this undertaking, for few things had been better done for the expedition than Castel's management of our base at Grassy in 1917. I accordingly thought I could afford to humor myself until the indisposition passed, as I felt sure it would do in a few days.

We started from Shingle Point for King Point, Amundsen's former winter quarters fifteen miles west, with a strong head wind blowing and I know now that I must have had a fever of probably 103° or 104°, for I have never been more ill than I was on that day and on the two days following while we were storm-bound at King Point. The fourth day of the high fever we traveled from King Point to Stokes Point, a distance of over twenty-five miles and I walked about eighteen of them, still against a head wind. But towards the end I had no more strength and had to be carried on the sled to Stokes Point. Here we met Inspector Tupper, who was giving up his command at Herschel Island and was bound for civilization by way of Fort Macpherson and Dawson. He is reported to have said later that he realized I was seriously ill, but he said nothing to me at the time and I did not as yet understand it, for my experience with illness is limited.

For once I found an Eskimo house intolerable. They are always overheated from the point of view of a white man but I am accustomed to them. In this case, however, I could not endure the heat and slept in the alleyway where the temperature went below freezing. I had no thermometer but I knew that no matter how low the temperature fell I should not suffer from cold. Recalling the modern treatment of fevers where the patient is frequently packed in ice, I considered it quite orthodox to sleep in an unheated snow alleyway.

The next day my Eskimo host hitched up his team, for ours was loaded, and carried me wrapped in blankets into Herschel Island, about eighteen miles. I went directly to the Police barracks, where I was welcomed by Constables Lamont and Brockie. They sent at once for the missionary, Mr. Henry Fry, who was considered to have the most experience of any one on the island with disease, or who at any rate had a thermometer. My temperature was something above 104°. There was great excitement forthwith. I was bathed, put to bed and treated as sick men commonly are.

Nothing could have exceeded the kindness of every white man on the island, nor were the Eskimos unsympathetic. The two white women, Mrs. Fry and Mrs. Harding, also did what they could in the way of cooking and sending over dishes that are considered safe and proper for invalids.

No one, except possibly Mr. Fry, realized in the early stages that the disease was serious. As for me, I counted every day on being out of bed to-morrow, but as time lengthened into weeks I began to chafe. It did not occur to me that I could not make the ice trip, but only that once more the start was going to be delayed until March when the temperature is no longer as low as it should be for the best progress over moving ice. So I sent for Storkerson and conferred with him about the alteration of plans involving further delay.

Two weeks later I began a gradual recovery, hastened, I believe, by my eating generous meals of the most substantial kinds of food.

Finally, I felt sure that in four or five days I should be able to leave Herschel Island, so I sent Storkerson off westward to have everything ready.

But a few hours after he had gone I was taken with violent chills and a fever that was over 105°, the first stage of pneumonia. It was only now that every one began to realize the seriousness of the situation. This came about especially through the illness of Constable Lamont, who was taken with a disease which had much more clearly marked the orthodox symptoms of typhoid than had been true in my case. It was realized now that I had just been through typhoid, which brought great horror to every one when they thought of the things they had allowed me to eat. During the period of the highest fever I had been without appetite, but as soon as the fever began to drop to 100° I had begun to eat steaks and fried potatoes and whatever else the Police were having for their meals. An hour before my sudden relapse I had eaten a large meal of macaroni and cheese and it was believed that this had brought on the relapse. Those who had then protested now felt that the relapse served me right, while even the others were constrained to admit that nothing else could have been expected to befall a sick man who ate macaroni and cheese.

Conditions of severe illness in the Far North are different from those of ordinary civilized surroundings, even in an outpost of civilization such as Herschel Island, and may therefore have interest justifying description. My treatment had been in many ways the opposite of the orthodox way with typhoid. They had not realized that I had typhoid and I had thus so far mercifully escaped the orthodox treatment of ten years ago, which was still in vogue when the medical books of Herschel Island were written. But Constable Lamont's case was handled according to these antiquated proprieties. He became steadily worse and just when I was lowest with pneumonia he died in his room across the hall.

Some one now started the idea that this might be typhus. The medical books of the island had been hunted up and read by every one except me, for, although I had more medical knowledge than the rest, it was considered that an invalid must not be allowed to read about diseases for fear of some dreadful deteriorating effect upon him. One medical book did get into my hands. It was one of a three-volume set and contained treatments, where the other volumes were devoted to symptoms. I wanted to read about the symptoms to be able to decide what my treatment ought to be, but those volumes were carefully kept away from me.

The idea that the disease might be typhus was at the basis of an heroic effort to disinfect the Police barracks with sulphur fumes. My room was closed and it was thought that the sulphur fumes would not enter, but I was disturbed by the prospect of the night. There was an Indian boy waiting on me and I asked him to keep my door open all night and also another door leading from a hallway to the outside. Had this been done nothing serious would have happened, but the Indian had not appreciated the reasons and with an idea that it was getting pretty cold in the house, he closed the outer door. I awoke with my room full of sulphur smoke and had just strength to knock on the wall loud enough to attract the attention of Mr. Seymour, who was about the building although he lived in another house. He came into the room, opened the doors and windows, and was there not more than two or three minutes, yet he told me that he spent several hours in the fresh air before he was rid of the severe discomfort caused by the sulphur in his lungs. The effect must necessarily have been more severe upon me. It may have been the result of this gas or possibly only a stage of pneumonia, but the second day after I commenced bleeding severely from the lungs. This bleeding lasted all day and there were two or three relapses.

It was now decided to move me out of the Police barracks to a separate building where Mr. Leo Wittenberg volunteered to nurse me, and for the next several weeks he and the Loucheux Indian boy were my attendants. Mr. Fry visited me frequently to give nursing directions, and Mr. Harding used to come nearly every afternoon and sit for hours telling stories. He is one of the most interesting story tellers I know and I always looked forward greatly to his visits.

But the convalescence was going badly. Just as soon as it had become clear that I had had typhoid I was put on the diet which used to be considered appropriate. The common belief was that it should be milk. Here there was nothing available but the ordinary tinned milk and a variety of powdered milk. My belief was that if I were allowed to eat the hearty foods for which I hungered I should probably have a better chance of getting well, and I used to argue elaborately and, it seemed to me, convincingly for a chance at a square meal. I explained how the old idea of feeding typhoid patients on milk only was now antiquated and that many of the best hospitals will give a typhoid patient as much food as they would a healthy laboring man. It exasperated me sometimes and at other times it made me laugh as heartily as my condition would allow to find that my most conclusive arguments were considered only as examples of the cunning of delirium. It seemed to me clear that if this went on I should die of starvation. To a man who thinks himself as much of an expert on scurvy as I do, it seemed equally clear that my diet would bring on scurvy. This I did perhaps not need to mind, for I knew how to cure scurvy if only my directions for doing so were not considered also the cunning of delirium.

In February when I was down with the pneumonia I realized that I was in for an illness of weeks and perhaps months, even should it have a fortunate issue. Then I sent a message to Storkerson directing him to take command of the spring exploratory operations and to make an ice drift such as I had planned, or else the best exploratory journey he could with a destination either in Wrangel Island or Borden Island.

Storkerson and most of our able men with all our dogs were off on the ice when I began to feel that my one hope of living through was to get away from Herschel Island to the hospital at Fort Yukon. This is the most northerly hospital in America, about four hundred miles south from Herschel Island as one has to travel, seeking the mountain passes and following the river channels. I thought that riding in a sled in the open air might not hurt me of itself and that there was at least a chance of getting there. The desire and probability of more substantial food was my chief motive in planning this journey.

It happened that three Indians from the vicinity of Rampart House came to Herschel Island for trading purposes and I asked for an interview with them. They were reluctant although not entirely unwilling to take me south to Fort Yukon, and I proposed to the white men that they should allow me to try to reach the hospital. But they decided on consultation that such a journey would be fatal and could not be allowed.

During the first stages of my illness the commanding officer of the Police had been absent. Inspector Tupper had left for Fort Yukon and the new officer, my old friend Phillips, had not arrived from Macpherson, although he came home shortly after I was moved out of the barracks into the separate house. While the Indians were still with us I talked with him and convinced him that it would be best to try to take me to Fort Yukon, but later he allowed his opinion to be outweighed by that of the others. The best thing that could be agreed on was an urgent letter to be sent by one of the Indians to Dr. Grafton Burke of the Episcopal hospital at Fort Yukon, urging him to come to Herschel Island if he could.

I think it was before this that Mr. Fry told me that he was expecting Archdeacon Hudson Stuck to arrive from the west early in April, and it now became my main hope and dream that the Archdeacon might arrive in time, for I felt sure that he would stand with me and probably undertake himself my transfer to the hospital. But travel conditions are uncertain in the North, and any one of dozens of things might have happened to delay the Archdeacon or even prevent his coming. I accordingly continued my efforts, especially with Inspector Phillips.

A week after the Indians left my condition kept growing worse until every one finally agreed that I was going to die. Then Phillips took the stand that if I was going to die, anyway, I might as well die as I wanted, trying to get to the hospital. This did not meet entirely the views of some of the others, who may have felt as my mother said (but probably did not feel) when I went on my first expedition north: "What worries me most is that if you die you will not get a Christian burial." There is at Herschel Island a very respectable graveyard, growing larger every year, where many persons have been buried with all the pomp and circumstance of death. I am sure that if I had died there I should have had a very presentable funeral as well as an orthodox one.

Inspector Phillips now had his mind made up and there was no budging him. Constable Brockie was willing to volunteer to take me but I believe the Inspector formally detailed him for the purpose. My Indian boy whom I had hired in the delta when I was buying dogs, was to go with us, and two Eskimos, Sharyoak and Naipaktuna, the latter as guide. Mr. Fry was willing to go along to help look after me, although he would not take the responsibility of being in command. At the instance of some of the white men of the island I was asked to sign a paper saying that the journey was made at my insistent request and that I took the whole responsibility myself in case anything should go wrong.

I am afraid I have not given a very clear account of this illness through three months, and this is not a medical book, anyway. But it seems in general that first I had typhoid, then pneumonia, then there were two recurrences of severe pleurisy, and through the pneumonia and the two pleurisy attacks the alimentary tract continued in extremely bad condition and seemed not to be improving. Typhoid, pneumonia and pleurisy are so common that they are not worth describing in themselves, but it is not every one who can have them under such unique circumstances, and for me personally my adventures during this time are as interesting in retrospect as any others.

It was in the first week of April [1918] that we left Herschel Island. During the last three months I had several times been free from fever for a day or two, but for a week before we left Herschel Island the fever had been continuous although not high. A sled was specially prepared for me with springs taken from a small spring bed. I was very comfortable from the start, and at the end of the fifteen-mile drive to Stokes Point to every one's surprise I had no fever. Mr. Fry, now that we were away from the settlement, was less inclined to insist on the orthodox liquid diet for a typhoid convalescent and I was allowed to eat one of my favorite dishes, some frozen raw fish. This seemed to do me good and next morning there was still no fever. This was so encouraging that it appeared no longer necessary for Mr. Fry to continue with us. He said without the least cynicism or malice that as I seemed to be getting along better the more my conduct differed from what he thought it ought to be, it would probably be as well for me to take the responsibility of doing as I liked, letting him stay behind.

I have told this story much as it now is in my mind but I may have given a wrong impression of Mr. Fry. No man could have been kinder or more attentive and no one's intentions could possibly be better. He had had pneumonia himself, had seen several cases of typhoid, and, as I knew very well, the things that he wanted me to do were just the things that were considered by the medical profession up to perhaps five years ago as the things that should be done. No one will criticize him for insisting on the ordinary routine of typhoid convalescence. I owe him and every one else at Herschel Island my deepest gratitude for their trouble and for their kindness and good will.

Day after day we traveled through unsettled country and day after day I had my breakfasts and suppers of meat and fish, sometimes frozen and raw but sometimes hot, boiled. And I felt better and regained flesh, until finally when we arrived at the mouth of the Crow River at the trading post of Schultz and Johnson I was no longer in great need of the expert care of Mrs. Schultz, who before her marriage had been a trained nurse at Fort Yukon. But that I did not need the care does not mean that I shall ever forget the kindness of Mr. and Mrs. Schultz on my arrival. They knew about my illness from the Indians who had carried my letter past their place some days before and who ought to be now at Fort Yukon. They felt quite certain that Dr. Burke would start instantly on a journey north. I might have stayed longer under the care of Mrs. Schultz, which was as efficient as any care I might expect in the hospital, but I hurried ahead to save Dr. Burke the trouble of coming far to meet me. It was easy now to engage local help and Constable Brockie and his men turned back here with my grateful thanks and the news of my recovery. This news would be surprising to the people at Herschel Island except as they were prepared for it by what Mr. Fry might have said when he returned from Stokes Point.

A local team and driver were engaged to take me on down to Rampart House, where Dan Cadzow welcomed me even more warmly now than he had eleven years before when I ended here my journey on a raft down the Porcupine River. He related that when the Indian carrying my message had arrived at Rampart House his dogs had been so tired and the journey going so slowly that Harry Anthony, another friend from the Porcupine trip of 1907, had undertaken to hurry the message on. Cadzow felt sure that Anthony would have traveled at least twice as fast as the Indians and that Dr. Burke was now on his way north. Still, with intent to lessen Dr. Burke's trouble, I delayed at Rampart House as little as possible and hurried on till we met the Doctor's party at Old Rampart, thirty miles below.

My first meeting with Dr. Burke was a foretaste of the comfortable time I was going to spend under his care at Fort Yukon. One of my first questions, characteristic of typhoid convalescents, was what I should eat and how much. The answer could not have been more satisfactory. "Eat whatever you like, as much as you can, and the oftener the better."

There are certainly no people in the world more hospitable or thoughtful than the pioneers of Alaska. They are just far enough from the outside world not to be weaned from the delicacies of the cities, with which they yet have the greatest trouble in keeping themselves supplied. Chickens and eggs, fresh fruits and vegetables are considered by them necessities and are valued beyond anything that can be appreciated farther south. Spring was approaching, and thinking that I must be longing for these things as many times more than they as I had been longer without them, every family at Fort Yukon had contributed some delicacy for Dr. Burke to carry to Herschel Island. One woman had sent a dozen apples, another a roast chicken, and so on, with all the things that they considered best and most tempting. I was almost ashamed that not one of these delicacies appealed to me in itself, although no one could appreciate more keenly the sentiment which they represented.

Mrs. Schultz had talked of how much she had longed for this or that thing which Dr. Burke had brought me. I tried to compromise so that she might profit through my forgetfulness of southern food fashions as far as was possible without giving offense to my friends at Fort Yukon. I asked Dr. Burke's advice on this point, and when he was convinced that my tastes were really as perverted as I said, he suggested that if I were to keep a quarter of each kind of thing sent to me, forwarding the rest to Mrs. Schultz, the women at Fort Yukon would probably feel quite all right about it. So I kept one of the chickens, two or three of the apples, some of the gingerbread, and so on through the list. Judging from Mrs. Schultz' thanks and the kindness of every one at Fort Yukon, I have concluded that no one was offended and that everything went as it should. Those that hankered for them got the chicken, eggs and fruit while I ate huge meals of moose and caribou which I much preferred.

We were more than half-way from Old Rampart to Fort Yukon when, April 24th, Archdeacon Stuck and Walter Harper caught up to us. They had arrived at Herschel Island a few days after we left. On his way east along the coast from Point Barrow the Archdeacon had learned of my illness from Captain Hadley at Barter Island and had hurried on to Herschel Island with the intention of doing just what I had hoped he would do—taking me to the Fort Yukon hospital. They had now come south by a different route.

Archdeacon Stuck's book, "A Winter Circuit of our Arctic Coast," is to me all the more delightful because he finds abundant leisure to digress on all sorts of things only indirectly concerned with his story. That is the advantage of writing a book about the journey of half a year instead of trying to deal with five years, as we have had to do—not that I could compete with him in this field in any case. In the account of how he proceeded eastward along the Alaska coast, he mentions picking up the news of my illness and how he formed the plan of bringing me with him. On page 346 is his mention of the meeting:

"By five o'clock we were moving again, and a long journey of thirteen hours—the dogs doing much better than in the daytime—brought us out not only to John Herbert's place but to the combined parties of Mr. Stefansson and Dr. Burke, who had met at the Rampart House and were thus far on their way to Fort Yukon.

"It was a very happy reunion for Dr. Burke and myself, and I was greatly pleased to meet Mr. Stefansson and to find him so much improved. The folks at Herschel Island doubted if he would reach Fort Yukon alive, but I was not surprised to find him mended. I think that had he stayed in the little cabin where he lay so long sick, with several zealous amateur practitioners doing their rival best for him, he would very likely have died."

Three days later we arrived at St. Stephen's Hospital, Fort Yukon, and I was so far recovered that I walked without assistance from the gate to the house. Some enterprising Alaska journalist later wrote a vivid story printed in many newspapers about my hardships and sufferings on a four hundred-mile journey over snow-covered arctic mountains from Herschel Island to Fort Yukon "in a neck-and-neck race with Death." On the said race I never noticed the hardships, probably through lack of the journalistic instinct. I enjoyed each day the events thereof and rejoiced in the increasing certainty of recovery. If the reader insists that on such a journey under such conditions there must be hardships, I shall not argue the point. Perhaps I don't know what the word means. But I do know that on the twenty-seven-day journey I gained in weight thirty pounds.

From the windows of my room in St. Stephen's Hospital I could look south across the Yukon River and across the Arctic Circle into the "Temperate Zone." Not only by this sign but by many others was my polar voyage over. From the isolation and virgin peace of the North we had come first to Herschel Island with carpets and rocking-chairs and news from "the world" thrice a year or oftener; now we were at Fort Yukon with a wireless bulletin coming in every day at noon. The Germans were crushing their way every day nearer Paris and their guns were shelling it (April, 1918). The electric sensory nerves of civilization reach thus far north already, and ours was part of the painful and breathless suspense of the whole world. Both for good and for evil I was home after five years.

On the whole expedition I had much to be grateful for whenever we touched an outpost of civilization. At Nome, at Barrow, at Herschel I am under debts of kindness that I desire to pay but have not the means. A list of those who were kind and helpful would be nearly a census of these places. So it was at Fort Yukon. In the Hospital, in the Government Wireless Station, in every private house was the courtesy, the boundless hospitality, the considerate kindness that can never be forgotten. To name all who were kind would be a long roster and would tax the reader's patience; to name any and not others would be invidious.

After a convalescence of three months at St. Stephen's Hospital, the journey was simple—by river steamers up the Yukon to Dawson and White Horse; by railway south to Skagway and more frontier hospitality at the frontier's most southerly outpost, and by ship to Vancouver and Victoria where I met the crew of the *Polar Bear* to pay them off at the Navy Yard from which we had sailed nearly five and a half years before. They had sailed the *Polar Bear* from her winter quarters at Barter Island, to Nome. There she had been sold and the crew had come south from Nome to Seattle by passenger steamer.

There were left in the Far North still carrying on the work of the expedition only Storkerson and his four faithful comrades, the story of whose travels over the polar sea for eight months, with an ice floe for a ship, is told in the Appendix to this volume.

I reached New York in time to join there in the true joy of the False Armistice, and helped in Toronto to celebrate the real ending of the war from which we had been more nearly shielded than any citizens of the civilized world.

It is difficult to summarize briefly scientific work that requires a number of volumes for its proper elucidation. The large scientific staff of the expedition brought back information in many fields. This is now being published by the Department of the Naval Service at Ottawa. Three octavo volumes are already printed and the work is going forward steadily. At least fifteen more volumes are already partly or wholly written. It is probable that the complete scientific results will be more than twenty volumes and perhaps towards thirty. It will naturally take a number of years to get all of these ready for the press.

Men will differ according to their viewpoint on the comparative importance of the various results. The botanical and zoölogical reports and the geological ones are more easily than others translated into terms of money and economic progress. The discovery of new land gives a few more spots of color to our maps and forms, therefore, a substantial addition to our knowledge of the world we live in, substantial not only in that whoever chooses can go to these islands and walk on them but also in the sense that we can easily objectify them through representation on maps.

The very diversity and volume of the scientific results of the expedition makes the task of summarizing them really hopeless. Members of the staff would doubtless differ with me, but as they are not writing this particular book but rather one or another of the scientific reports, I shall offer here my opinion that the most valuable result of the expedition will be not any of its concrete achievements but rather the general change in the trend of the world's thought which should follow from a broad consideration of all that was done and of how it was all done. Those who go to China and Turkey are less impressed with the few strange things they see than with the commonplaceness of the general average. It is not only ignorance but also romance that retreats before the advance of knowledge. Every geographic discoverer must plead guilty to making the world poorer in romance. He does so in exact proportion as he makes it richer in knowledge.

This expedition has contributed materially towards making easy what once was difficult, and safe the things that used to be considered dangerous. It is human nature to undervalue whatever lands are distant and to consider disagreeable whatever is different. But we have brought the North a good deal closer and have made it look more than it used to like Michigan or Switzerland. To the members of our expedition the glamorous and heroic Polar Regions are gone and in their place is a friendly but a commonplace country. To the reader the same will be true in proportion as he succeeds in seeing, either through this narrative or through our technical volumes, that it is the mental attitude of the southerner that makes the North hostile. It is chiefly our unwillingness to change our minds which prevents the North from changing into a country to be used and lived in just like the rest of the world.

# APPENDIX

## DRIFTING IN THE BEAUFORT SEA

[By Storker T. Storkerson, in *MacLean's Magazine,* March 15 and April 1, 1920.]

When in 1914 I was with Vilhjalmur Stefansson on the first trip across the Beaufort Sea from Martin Point, Alaska, to Banks Island, it was a matter of considerable annoyance to me while we were living off the country to have to haul heavily meat-laden sleds through the soft snow in the spring. I could never see any necessity after our groceries were gone to have more than one or two days' rations on our sleds, because it appeared to me evident that when we needed meat and stopped to look for it it could always be obtained.

While the Commander and I had the same ideas on the subject, our other companion continued pessimistic. When he saw a seal he thought we had better get it because no one knew what might happen or when we would see another. So the Commander killed it and a good many besides to please him. This resulted in a great amount of useless hard work as in the latter part of the spring, when warm weather came, the snow was soft and the runners of the heavily-laden sled would sink through, and as we had no toboggan bottom on our sled the benches would scrape along the surface of the snow-drifts, acting as brakes, which would always stop the dogs unless we helped them, and a good many times our help was not sufficient to keep it going. At times it would take us several hours to travel a quarter of a mile. This could all have been avoided if our comrade had been of the same attitude of mind as the Commander and I. Work would have been considerably less, as the sled would have been lighter, and naturally our speed of traveling would have been greater than it actually was.

This skeptical attitude of the men towards the Commander's plan to live off the country on his exploring trips caused us a good many inconveniences. The men never were willing to leave camp and start to live off the country right away. They always wanted to have at starting as much food on the sleds as we could possibly take with us. If we could have retained the same men during the whole expedition the later sled trips might have been different in outfit, and I am sure the results would have been better; but, as we were continually breaking in new men, we had to start out from our headquarters each time with the same kind of food that previous Arctic explorers had carried and rely upon teaching our men our method of living off the country gradually before our groceries gave out and we began living on meat only. Always when the men returned from the trips they were enthusiastic about the life they had lived and the meat diet. They got to like the kind of meat and they said they had never felt better in their lives.

### PREPARING FOR OUR SPRING WORK

What had been the rule for previous years was also to be the rule the winter of 1917 and 1918. A couple of our men were willing enough to start living on meat right away, but the majority, including of course the new men that were engaged the summer of 1917, said that the meat diet might be all right and, while they had no objection to living on it when the time came, they wanted as much food taken along as possible. Although we knew it to be a waste of energy to haul sleds loaded with rations, we had to do it in order to make our men feel safe and to satisfy their individual food prejudices which depended on the variety of food they had been used to—the less the variety they had been used to the greater the prejudice against trying anything new.

Our preparations for the spring work of 1918 commenced on November 25, 1917, when while in camp at Herschel Island and after we had found that we could buy the needed supplies from the trading companies in the country, I received instructions from the Commander to proceed to Barter Island and superintend the making of the equipment needed for the ice journey of our fifth year in the spring of 1918. Owing to stormy weather it was not before the morning of November 27th that I was able to start west with one team of seven dogs hauling a load of seven hundred pounds. After being delayed by considerable stormy weather and stopping over here and there in order to buy supplies from Eskimos and white men, it was not until the 9th of December that I reached our headquarters at Barter Island.

Upon arrival there I immediately had the making of the outfit and equipment started. For the short time at my disposal I had a great amount of work to do, and every available man had to be put to work and kept at it steadily. New sleds had to be built of the sled material we had succeeded in buying; rations for men and dogs had to be put up and packed properly; outfits of clothing for about twenty-five men had to be made; arms and ammunition had to be overhauled and packed; hunting implements, tents and camping gear, canvas boat covers and boat frames had to be made; and as we had at headquarters only a small amount of supplies for the spring work and needed for the maintenance of the expedition's complement at Barter Island a great amount of supplies which could only be had from the Hudson's Bay Company stores at Herschel Island or from H. Liebes and Company's trading post at

Demarcation Point, we had a deal of freighting to do. So, after giving orders to Captain Hadley as to getting ready the previously mentioned equipment, I again set out for Herschel Island to buy additional supplies and have them and the already bought supplies freighted west, taking with me all available sleds, men and dogs, and hiring additional men and teams wherever I could on the way.

Arriving at the Island December 29th and receiving no news of the Commander who had late in December gone eastward and up the Mackenzie River to buy additional dogs and dog food, I bought my supplies, collected the supplies already bought by the Commander and started on my return to Barter Island, December 31st.

On arriving there January 4th I found that during my absence the work of preparing the equipment for the exploring work had progressed well under the direction of Captain Hadley and it now looked as though we could easily leave headquarters for Cross Island, the starting point we had chosen for the ice journey, at the time we had first planned—February 1, 1918. In journeys such as we planned it is important to start by the first daylight after the midwinter darkness so as to have the advantage of the low temperatures which then prevail for cementing quickly together the ice that is broken now and again by the gales.

### STEFANSSON TAKEN ILL

Five days later, on January 9th, when the preparations were nearly completed, an Indian messenger arrived from the east, bringing a letter from the Commander saying he had been taken ill at the Mackenzie and now was in bed at Herschel Island, to which place he requested me to come immediately.

So, leaving the remaining work again in the care of Captain Hadley, I started for Herschel Island, where I arrived on January 24th, finding the Commander in bed and suffering from the latter stages of typhoid fever, from which disease, by the account of himself and others, he was getting better but he was still a pretty sick man. Immediately on my arrival he was anxious to talk about the affairs of the expedition and commenced asking how the work of preparing our equipment was progressing and discussing our plans for the proposed work, which had been to start north from Cross Island at north latitude 70.5°, west longitude 148°, with all our available force of men, sleds and dogs, and proceed to north latitude 75° or 76°, thence on a great circle course west towards Wrangel Island or Siberia. This, I now was told, was not the thing for us to do, as the Commander had received information while up the Mackenzie that the Norwegian explorer, Captain Amundsen, and the American, Captain Bartlett, each on his separate expedition, intended with their ships to go into the ice somewhere to the north or west of Point Barrow and try to drift with the current across the Polar Basin. This meant that they would explore the territory through which we intended to go to Wrangel Island, and, as our object on the Canadian Arctic Expedition was to acquire as much scientific information as possible and not to compete with other explorers but to work in conjunction with them, the Commander now told me he had decided that the best thing for us to do would be to go north from the before-mentioned starting point to latitude 77° or 78°, thence in a great circle course east toward Prince Patrick Island, thence south across that island, crossing McClure Strait to the Bay of Mercy, thence overland to Cape Kellett, where we would arrive early in the summer and in time to meet the whaling ships with which we could return to civilization.

As an alternative to the first plan he had another which he preferred and would follow if men could be had that were willing to go with him. Starting from Cross Island he planned to go north two hundred or three hundred miles offshore to north latitude 74° or 75° and from there send all unnecessary men and dogs to shore, the advance party camping on the ice and drifting with it in order to take observations and soundings, determining the currents in that part of the ocean besides securing data on meteorology, zoölogy, oceanography, etc. The discovery of new land was also possible. The only drawback was that he thought we possibly might not get men willing to go on a trip of that kind. It was unique, the like had never been undertaken by previous explorers, and so might be considered dangerous.

So the thing to do first was to get the Commander in shape to travel as soon as possible, with which in mind I set about nursing him as well as I could, being assisted and advised by every white person there who all thought they knew something about doctoring. And it spoke well for the Commander's constitution that on the morning of February 5th he had so improved that he thought it time to send me west to headquarters to attend to the final preparations and have everything ready against his arrival there, which would be in the near future, as he thought he would be able to leave Herschel for Barter Island in three or four days.

While the dogs were being hitched up in preparation for my departure he came out to see me off and bid me Godspeed and good-by till we should meet at the beginning of the ice journey. This kindness and consideration cost him dear, as the exposure that he subjected himself to then, I afterwards learned, caused him a very serious relapse from which he barely escaped with his life and which prevented him from taking part in that spring's exploratory work, making it absolutely necessary for him to return to civilization for medical aid. It was not until eighteen months later that I again met him at Banff in the Canadian Rockies.

What had happened to the Commander I did not know before February 13th, when in camp at Demarcation Point our dog driver, the Eskimo Emiu (Split-the-Wind), arrived from Herschel Island with letters from the Commander which he, being unable to write, had dictated to one of the Royal Northwest Mounted Police constables, telling me about what had happened to him and that it was impossible for him on that account to proceed with the work himself and so putting me in charge of the expedition's exploratory work, giving me a free hand in everything and asking me to do the best I possibly could. This change of affairs surprised me, but the necessity of getting the earliest possible start on the ice journey made that surprise short-lived. I immediately commenced to get ready for my departure to headquarters at Barter Island, where I arrived February 19th. Five days later I had the greatest part of the supplies on the road from Barter to Cross Island and on February 28th I left headquarters with the last two sleds, teams and men for our point of departure, where, owing to stormy weather, I did not arrive before March 11th.

On my arrival at Cross Island I immediately acquainted the men with the state of affairs and the change of command and outlined the plans which the Commander had spoken to me about at Herschel Island, explaining to them that the plan of drifting for one year on the ice in the Arctic Ocean would be by far the most valuable scientifically. But although they admitted the great scientific value, none of them were willing to undertake a trip of that kind. They all professed a desire to return to civilization as soon as they possibly could, saying that they had been in the Arctic long enough, that they thought they had done what could be expected of them, and as they were willing to undertake the trip with me north to latitude 77° or 78°, thence to Prince Patrick Island and to Cape Kellett on Banks Island, they thought that the expedition and the Government could not help but be satisfied with the scientific results of the expedition in general, and at the same time they would be able to return to civilization the following summer, which was what they desired most. So, not being able to get men for the drifting trip, I had to be satisfied with attempting the trip to Prince Patrick and Banks Island. During the following three days I put everything in order and had adequate equipment for that trip loaded on my sleds in readiness for our departure.

### WE START OUT ON THE ICE

On the morning of March 15, 1918, I started northward over the ice with twelve men, fifty-six dogs, and eight sleds, with about eight thousand pounds of provisions and equipment of all kinds which I deemed necessary for that kind of work. We camped that night thirteen miles offshore on moving sea ice, having immediately upon entering on it noticed its fairly rapid westward drift before the easterly wind.

Ten days later, on March 25th, we were about sixty miles from land, having passed through the dangerous rough ice belt which always exists between the main pack and shore. Traveling through this belt snow was scarce and we used tents to sleep in at night but as soon as we came to the old ice pack where we could be comfortable because good snow could be found, we commenced to live in snowhouses. We preferred them to tents, which during the Arctic winter should be used only in emergencies.

Traveling mostly over old ice, the going getting better the farther we got from shore, we proceeded till the night of April 3rd when we were about one hundred and five miles north of Cross Island and at north latitude 72°, west longitude 147°. On the following day I sent the first support party, consisting of our chief engineer, Herman Kilian, in command of two men, two sleds and nineteen dogs, on their return to Barter Island. Their equipment naturally was the poorest we had. Early the following morning they bade us good-by. Taking with them my reports to the Commander, they started for home while a few minutes later we proceeded northward with our remaining nine men, thirty-six dogs and five sleds.

As days went by the old ice floes continually increased in size, and over them we found traveling good with a little road-cutting here and there through ridges bordering the floes. In the forenoon of April 8th we came to an old ice floe which it took us three hours to cross, its diameter being about seven miles. Upon our arrival at the northern edge of this floe we were stopped by an open lead, across which in places it was impossible to see the ice to the north. To cross it by sled-boat was impossible on account of the young ice and the width of the lead. Following along to find a place where both sides would meet had sometimes in the past been a successful method of getting over a lead and I intended to try this once more; but, when from an ice hummock about fifteen or twenty feet above sea level the lead could be seen disappearing to the east and to the west wide open, there was nothing for it but to build our house near by and wait till the lead should close.

On the night following our arrival at the lead the easterly wind which had continued blowing steadily since our departure from shore increased in force and shortly was blowing a gale, with of course the accompanying thick snow which made it hard for any one to be outside. So during the time spent in camp there no hunting was done except a few hours on the first day after our arrival at the lead when seals seemed to be numerous and we shot and retrieved three. With that strong wind blowing it was not long before we had considerable evidence of pressure through the shaking and vibration of the ice. At the edge of the lead considerable crushing could be seen when I walked over there. It was evident that the floe on which we were camped was rapidly drifting to the northeast before the wind.

When I was with Leffingwell and Mikkelsen on their ice trip in 1907 * we had, on returning towards shore, experienced a rapid west-

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* See Ejnar Mikkelsen: "Conquering the Arctic Ice," Chapters VI and VII.

ward drift with easterly winds, and when with Stefansson in 1914 from Martin Point north to latitude 74° and east to Banks Island we had during April and May had easterly winds before which the ice drifted rapidly to the west away from our destination and in doing so opened wide leads which delayed our progress considerably. We had to wait as long as ten days at one lead before it closed sufficiently to enable us to cross in our sled-boat. Since then we had learned about the westward drift and the deplorable end of our flagship, the *Karluk;* all this data pointed to and made us practically certain of the existence of a permanent westerly current in the Beaufort Sea between the parallels of north latitude 70° and 74°.

When leaving shore on this our fifth ice trip I had immediately noticed the westward drift and so had, when traveling, till April 8th always headed one or two points to the east of the north course I wanted to travel, so as to counteract the westward drift. Where with Leffingwell and Mikkelsen we had succeeded in making the trip easily and again with Stefansson in 1914 we arrived at Banks Island safely, the trip we were now attempting for the Canadian Arctic Expedition greatly exceeded any of the previous trips we had undertaken as to distance to be traveled; so much so that, when I found that we were stuck at the wide lead in a strong easterly gale during which we were drifting rapidly west, I commenced to think that the chances of our ever being able to reach our destination and make the intended round trip that spring were almost nil. I consequently commenced to cast about for other things to do instead.

### I CALL FOR VOLUNTEERS

I wanted to follow the Commander's plan and drift for one year with the ice, and so determined to make a strong bid for the support of my men to do that work. I explained to them all the previously written facts and why we possibly would not be able to make the trip we had agreed to make and that the drifting was the most valuable thing that we could do for the expedition under the circumstances; I explained that all the other work we could possibly do that year would be of small account and hardly worth while compared with drifting and should not be undertaken unless they refused to stay with me and drift and do their duty by the expedition. Following this talk I called for volunteers to stay with me and drift for one year in the Arctic Ocean, offering the wages the Commander had set for that work.

I am glad to say that when things were put up to them and it meant failure or success, the following five of my men came to the front: Second Officer August Masik, Seaman Adelbert Gumaer, Seaman E. Lorne Knight, Seaman Martin Kilian, and the boy, Fred Volki. The remaining members of my party refused point blank. But five men were more than I needed, as I intended to have only five men in the advance party including myself. So I sent the boy Volki home with the returning support party.

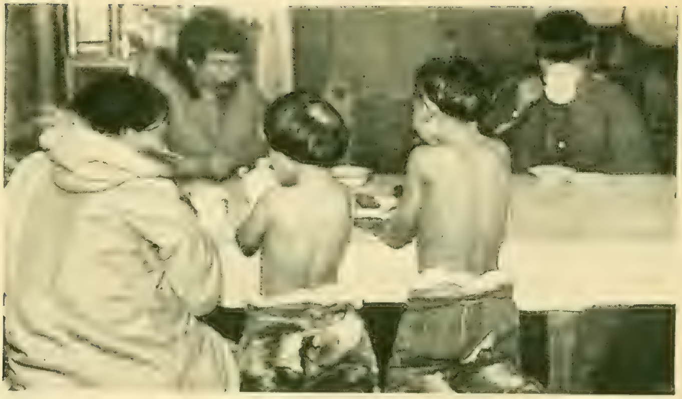
As my plans had been changed, it was of course to our best interests to have the second support party sent back to shore as soon as possible, with which object in view we anxiously awaited the end of the south-easterly storm, which was slow in coming. It was not before April 14th that it moderated sufficiently to enable us to get a set of observations which put us at north latitude 73° 3′ and west longitude 148° 32′, about a hundred and ninety miles north of the Colville delta. As soon as observations had been taken I set about having the equipment of the support party made ready and at night they started south and for home. The party consisted of five men under the command of Chief Officer Aarnout Castel, with twenty dogs and one sled, carrying our personal letters and my last report to the Commander.

So our last communication with civilization was severed and my party of five men, with sixteen dogs, continued to drift, having besides our equipment exactly one hundred and one days' full rations for men and dogs.

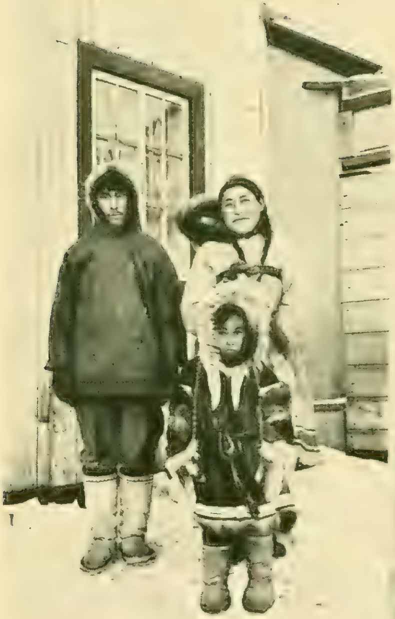
In order to live safely and comfortably on the ice for one year it was of the greatest importance for us immediately to direct all our energies to hunting bear and seal so as to procure as soon as possible a supply of meat to take us past the period of poor hunting which I knew was coming later. The supplies brought from shore I wanted to save for use next year on the journey back ashore, should we decide to travel during the midwinter darkness when hunting is difficult. Groceries, pemmican and the like are far more portable than meat unless it be dried. I desired also to save our kerosene for next year and wanted to commence at once using seal's fat exclusively for fuel. Therefore, the day after the departure for shore of the second support party I commenced to explore the surrounding ice for game and the best hunting places. This resulted in the discovery that the best hunting grounds lay to the east on the great stretches of young ice that now represented the old lead which had frozen over.

So, on the following day, April 16th, I had our camp and equipment transferred to a point three miles east, centrally located for the young-ice hunting grounds. In the afternoon of the same day as the effect of pressure a lead opened up which gave us our first chance to hunt. We took advantage of it and at night we returned to camp, having killed five seals which gave us approximately 450 pounds of meat and fat, a fine addition to our stock of provisions.

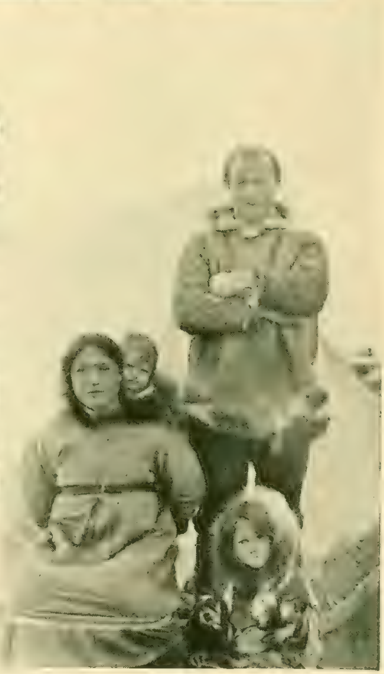
From this time on the greatest part of the time of my men was spent in hunting to obtain food for ourselves and our dogs while I attended to the scientific part of the work, which consisted in keeping a diary of everything worthy of note, taking astronomical observations,



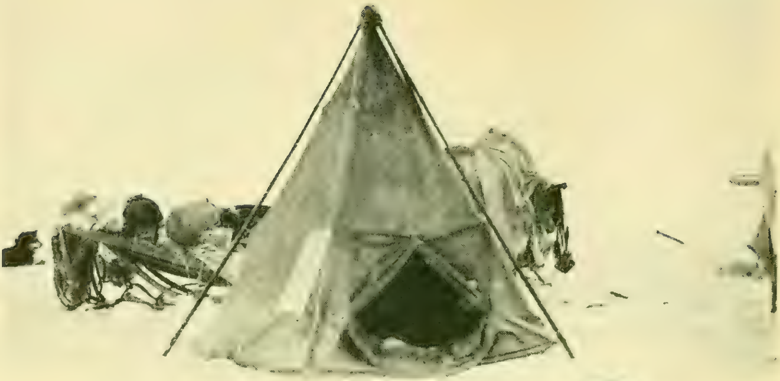
Eskimo Family at Our Table—Collinson Point.

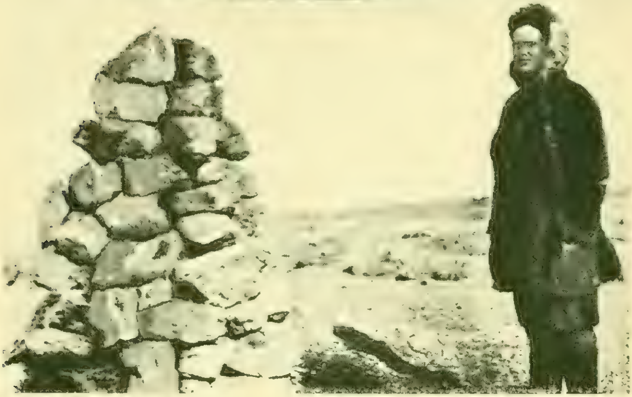


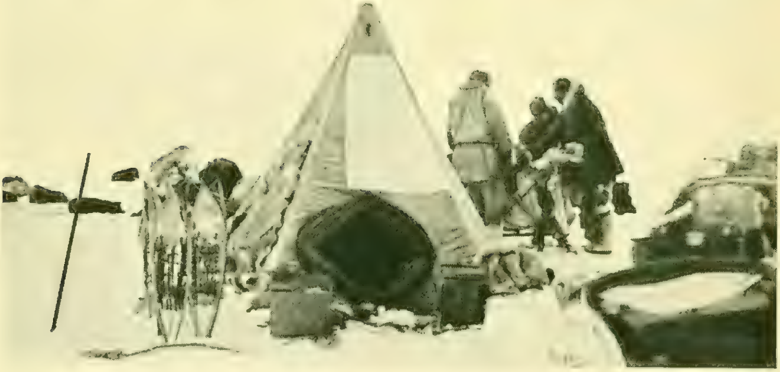
Point Barrow Family.



Storkerson's Family.







The Burberry Tent—Inner Cover.
Martin Kilian and the Monument He Built at Storkerson's Farthest
The Old Burberry Tent—Double Covers.

whenever conditions were favorable, to keep track of our drift and to be able to place our soundings correctly on the chart. One of my men, Martin Kilian, I detailed to keep a meteorological record which was strictly and continually supervised by myself.

After our first day's hunt at our new camp (which we did not have occasion to leave in the months that we spent drifting) hunting was done whenever a chance offered. Days in succession the ice would be closed up tight, no water could be seen anywhere and on these days there was no hunting. But whenever pressure occurred from a change of wind or other causes, leads would open here and there, thus giving us open water in which to seal. Our stock of meat and seal fat at times ran low. Repeatedly, in fact, we were down to our last meal. But always before it was gone we had a chance to hunt and so replenish. By the middle of June we had added to our original supply of provisions (brought from shore) 42 seals and 4 polar bears, about three tons of clear, boneless meat. This number of animals besides giving us and our dogs all the meat we needed for daily use, was also ample to provide us with a sufficient supply to last through the middle of summer when hunting is difficult.

After the weather got warm in the latter part of June and the snow and the ice commenced to melt, the fresh water drained off the ice and collected in a layer on top of the salt sea water in the open leads.

Seals usually lose some of their fat during the early summer and so barely float in the salt water when killed. Therefore, it can be easily understood that a seal which barely floats in salt water will sink when the water is fresh. This was what happened. The layer of fresh water on top of the salt was so deep that with our equipment the animals could not be retrieved. After we had killed a seal we often had the dissatisfaction of lying in our boat above it and watching it sink down through the fresh surface layer ten to twenty feet and then float away on the underlying salt water, without being able to do anything to prevent it. When we commenced our drift we had only 1,000 rounds of ammunition and so could not afford to waste any.

We therefore had to refrain from shooting seals in this fresh surface water, though we might be able to retrieve an occasional one. So we ceased hunting for a period of two months from the middle of June to the middle of August. At the end of that time the salt sea and the fresh water had had a chance to be mixed by the winds and when young ice first commenced to form at the approach of winter the amount of fat on the seals had also increased appreciably so that they floated with ease and so could be retrieved. Then our hunting was re-commenced and from the latter part of August till the time that we started on our return to shore, we procured 54 more seals, giving us a total of 96 seals and 6 polar bears secured during the eight months that we spent on the sea ice.

### SUMMER WARMTH ON THE ICE

By the middle of April the sun was fairly high and on calm and clear days it gave enough heat to melt the snow, especially in the vicinity of our sleds or anything else of a dark shade. Therefore, the time for snowhouses was past and we had to start to use our tents. Till the middle of June we used a single tent inside a snow wall with one of our canvas boat covers as a second roof, thus protecting ourselves from the cold nights and the occasional blizzards. By the middle of June there was no snow to use for walls. As a single tent was not enough to keep us comfortable, I had another larger tent made of one of our extra sled covers and set up with the smaller tent inside with a space of about 10 inches separating the two tents. This kind of camp we used from June till the time we started for shore and it proved very comfortable and satisfactory in every way.

After the thaw commenced the ice was naturally always wet, so we experienced great difficulty in keeping our bedding dry. Most all our clothing and bedding was made of reindeer skins and so, in order to be made to last and to be comfortable, they had to be protected from the wet. These conditions I had anticipated and had provided against by keeping two more sleds than I needed for traveling. The reason was that all our sleds had toboggan bottoms or platforms between the runners and underneath the benches to make them slide easily through the rough ice and to prevent the benches from being broken by hitting against the ice snags. When the thawing commenced I had the toboggan bottoms removed from under the two extra sleds and of them made a platform. This was placed inside our tent and served as a bed where the five of us could sleep at night and sit in the daytime when there was nothing else to do. To this platform more than anything else is due the fact that we spent the summer on the ice in comfort. Without it our clothing, and particularly our bedding, would have been wet in a very short time and so would have rotted, leaving us without anything to sleep in. Such an eventuality would have compelled us to turn shoreward sooner than we did.

### HOW WE COOKED OUR FOOD

In our equipment were included the usual appliances for cooking approved by modern explorers, the efficient primus stoves in which kerosene or distillate are burned in vaporized form. Of the latter oil we had at the commencement of our drift about 18 gallons. This if used sparingly would probably have lasted us three months or more. But this kind of fuel was better suited for use when traveling than anything which could be obtained on the ice. As noted above, I therefore early stopped the use of the distillate and instead burned the fat of seals and bears. At first our cooking was done indoors with the ordinary smokeless and odorless Eskimo lamps and wicks, but later when the weather got warmer so that we did not need the heat in our tent, the lamps were abandoned and our cooking was done outside. A fireplace was made out of a five-gallon kerosene can, placing two small iron bars on top of it on which the pots rested. It was a quick method of preparing a meal but available outdoors only because of the smoke and odor.

### OUR FLOATING HOME

The floe at the northern edge of which our camp was situated and on which we drifted through the summer of 1918 from the 8th of April to the 9th of October, can best be described as a large island of ice about seven miles wide and at least 15 miles long. This latter estimate is less than the real length of the floe but I say 15 miles because I only explored 15 miles of it. It may have been 30 miles long for all I know. In relation to the smaller surrounding floes it acted exactly as land does. The smaller floes would be more affected by the winds and would drift faster back and forth, depending on the direction of the winds. This fact was of great advantage to us in that with west wind we would have open water to the east. The smaller floes would drift away from the point at which we had our camp. With east wind the small ice on the west side would drift to the west, so we nearly always had open water in which to hunt seals.

From an elevation close by our camp the panorama presenting itself impressed me exactly as that of a certain kind of land. The color of course was the bluish white of ice but the contour of the hills, the ridges and the levels in between and in which numerous small lakes and ponds were visible, was exactly like certain stretches of prairie I have seen in the midwestern United States and Canada. This similarity of old ice to land is well known.

The thickness of the ice at our camp, judging by the amount of it visible above the level of the sea, I should say would be about 50 or 60 feet. This extraordinary thickness was just local and the average of the whole floe naturally would be much less, probably less than 20 feet.

### THE GAME WE SAW

Before the return of the second support party when we still were only 150 miles from the nearest land, numbers of snow buntings came to visit us. In the summer when we were drifting between the latitude of 73° and 74° North, a number of lapland longspurs were seen. In the first part of May and the latter part of August a number of different species of salt water ducks were seen—the king eider, the old squaw, and the surf scoter, the first going to the northeast and then again returning to the southwest; the latter two were seen occasionally all through the summer. Of sea gulls there always was an abundance, either one species or another. I noticed six species in all, first the jaeger gull, the ivory gull, the black-winged large gull, the gray-winged large gull, and two species of the smaller gulls of which I do not know the names. Besides these, two species of loons were noticed.

As with the ducks, in May and August beluga whales were seen going toward the northeast and returning to the southwest. The seal and the polar bear, of course, were always present, the seals in undiminishing numbers. The polar bears, however, seemed to get fewer in the latter part of the summer. When returning to shore I found a reason for this, as we met with numbers of them. At the time of the freeze-up they evidently came south to hunt on the large expanses of young ice near shore. From my observations it has been proved that the sea, in the latitudes where we drifted through the summer, teems with life of many different species. With my own eyes I have seen different kinds of fish both in the water and in the stomachs of seals which we had caught. Amphipods and a species of jellyfish commonly known as "whale feed" seemed abundant in the water and also were found in the stomachs of the seals. From what I have seen of conditions in that part of the Arctic Ocean, I know that there is no scarcity of food for the seal, the whale or the polar bear and so, of course, no scarcity of food for man.

### THE LEGEND OF THE WESTERN CURRENT

When I made up my mind to drift instead of going to Prince Patrick Island it was because I believed in the existence of a westward current in the Beaufort Sea which might prevent me from getting there. I had studied all the obtainable data on the subject and it pointed to the existence of a current in a westward direction. So, to prove finally the existence of that current, we started to drift, of course expecting that we would be carried into the area north of Siberia. We had fond hopes even, if the drift were fast enough, of landing on the New Siberian Islands or the Franz Josef Islands.

One, therefore, can easily imagine how puzzling it was to us to find that for three months, from April 14 to July 13, we drifted steadily towards east before the wind until we reached the longitude of 144.5° west of Greenwich. On July 14 the wind changed to the east and in about six weeks we drifted to the northwest till we reached the 151st degree of west longitude. Then the wind changed to the southwest again and we drifted to the northeast, reaching our Farthest North of 74° North latitude on September 3. From then on until October 9, when we started for the shore, we zigzagged back and forth before the wind and at the end of 184 days' drifting we were 70 miles north by west of our starting point of April 8, having drifted a distance of 440 miles, or an average of two and four-tenths miles per day.

All this time, while drifting, astronomical observations had been taken on nearly every clear day and we eventually obtained a line of soundings about 900 miles long. The deepest bottom sounding obtained was over 2,500 fathoms at a distance of about 90 miles from the north coast of the continent. A distance of forty miles from shore we had bottom soundings of over 850 fathoms. The reader can, by looking at the accompanying chart, obtain a better idea of the nature of the soundings obtained and our drift than from any description.

### I SUFFER FROM ASTHMA

In the latter part of August I developed asthma. During September I was very sick and wheezed my way through many sleepless nights. Having had no experience with asthma, I had no knowledge of what might happen from that disease and feared that I might by it be incapacitated from performing the duties evolving on me as the Commander of the drifting party. The men I had with me were inexperienced and if anything should happen to me there would be danger of the whole party being lost. So I made up my mind to cut the trip shorter than had been my original intention. One day late in September I called the men together in front of the tent.

"We're going to turn back," I said. "Winter is coming on and I'm not in shape to look after a party through such conditions as we may have to face."

It was, after all, not so trying a decision to make, for the results of our explorations so far had been satisfactory.

### WE START ON OUR RETURN

So after 184 days' drift we started on the return journey, with 55 days' full rations left of the original supply which had been good for 101 days. The trip to shore from latitude 73.9° N., in October was a unique experience in itself and showed the previously unknown possibilities of Arctic travel early in the winter.* We had to cross some of the leads in our sled-boats and others on treacherous new ice. Space will not allow me to enter into details of this return trip. It will suffice to say that on November 5, 1919, we again reached landfast ice, and November 7th we sighted land. Next day we camped on dry ground after having lived on sea ice uninterruptedly for 238 days, having experienced neither hunger nor thirst, danger nor hardships.

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* This has always been considered, and rightly, the most difficult and dangerous season of the whole year to travel. March and April, with intense cold and perpetual light are of course the best months. In summer there is real water between the broken floes which can be easily negotiated in our sled-boats and there is still continuous light. But in October daylight grows scarce rapidly and there are nearly continuous snowstorms and fogs. The thin ice lies treacherous under a blanket of snow that gives the same appearance to stretches that would support an elephant and to others that would engulf a child at play. The only safety lies in jabbing your ice spear through the snow ahead continually to discover if the ice beneath is firm or mushy. Storkerson's official report of this journey which would have been (but for the skill and judgment of the men who made it) the most difficult and dangerous

### THE SCIENTIFIC RESULTS OBTAINED

The scientific results obtained during the trip are as follows: We discovered that no permanent current exists in the Beaufort Sea between the North latitudes 72.5° and 74°. All drifts of ice in that territory have been proven by our astronomical observations and our meteorological records to be governed by the wind exclusively.* This dispels a theory almost universally entertained.

We have definitely proved that Keenan Land does not exist. The drift of our ice floe was right through the territory where Keenan Land is marked on the map published in 1912 by the American Geographical Society and the American Museum of Natural History, and instead of finding land we found a depth of more than 1,600 fathoms without reaching bottom. The value of the great number of soundings, bottom and no bottom, obtained can only be realized by hydrographers, but I might say they are considered valuable.

We have confirmed what the whole Stefansson Expedition has proved, that the Arctic Sea is not as inhospitable as people think. My party of five men were able to live for 8 months safely and comfortably on it and never went without a meal. It is true that I was taken sick with asthma, but then people get asthma in every country and climate. So far as we could judge we could have lived on the ice eight years as easily as eight months.

After landing in the Colville delta, I proceeded east to Flaxman Island and there obtained another set of observations on the stars Vega and Capella, which I had observed before starting on the trip.

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ever attempted in the Arctic, contains a sentence that deserves to become a classic. In it he sums up thus a journey over 200 miles of moving and treacherous ice in darkness, fog and storm: "We started from a point a little over 200 miles from shore on October 9th and reached land November 8th without accident or hardship." It is a little hard to realize that, apart from Storkerson's mental attitude toward them and his skill in meeting them, this journey had every terror of darkness and ice and storm that has taxed alike the strength, courage and descriptive powers of the explorers of the past. There was no affectation in Storkerson's simple summary of the journey. He annotated the statement later by saying: "We took every ordinary precaution and no extraordinary circumstance came up." But was it not Napoleon who said: "I make circumstances"? [Note by V. Stefansson.]

*It is possible that further study may show that the ice movement was not entirely controlled by the local winds and that Storkerson's statement is here too emphatic. [Note by V. Stefansson.]

After securing this I was able to get the average rate of my chronometer for eight months. This place was my point of departure and is one of the two or three best determined positions on the northern coast of the American continent. The celebrated explorer, Ernest deKoven Leffingwell, had his headquarters there for several years.

I then proceeded east to Demarcation Point and to Herschel Island where I spent the winter. In the spring of 1919 I proceeded up the Mackenzie River by whale boat with Inspector Phillips of the Royal Northwest Mounted Police to Fort Macpherson and there engaged passage on the Hudson's Bay Company's steamer to Fort McMurray, where I received orders from Ottawa to report to my Commander, Vilhjalmur Stefansson, at Banff, Alberta.

And so ended the fifth and last exploring trip of the Canadian Arctic Expedition.

# THE STORY OF THE KARLUK

Hadley told me the story of the *Karluk* many times over verbally. I could have written it down from what he told me but I preferred to have him write it out to be kept as a record. The document as he handed it to me is about ten thousand words. But Captain Bartlett has already published the full narrative in his book, "The Last Voyage of the *Karluk,* as related by her Master, Robert A. Bartlett, and here set down by Ralph T. Hale," Boston, 1916, and I shall consequently condense Hadley's narrative. I am basing my summary on Hadley rather than Bartlett for the interest that is given by a different point of view. In Bartlett we have the Newfoundland sailor as influenced by his association with Peary and other explorers. Hadley was British by birth (from Canterbury, England) but an American by adoption, and the typical American whaling officer in his outlook.

The reader of Hadley's story should remember that he had lived and worked with Eskimos under conditions such as he here describes for over twenty years. No "polar explorer" in history ever had so long a polar experience. This report of Hadley's was written at Barter Island the winter of 1917-18 while I was ill with typhoid at Herschel Island. Hadley died of influenza during the epidemic in San Francisco the fall of 1918, shortly after his return from the expedition.

Hadley's account follows: I quote certain parts and condense others. The matter enclosed in brackets is mine, not Hadley's.

V. Stefansson,
Commander Canadian Arctic Expedition.

You have requested I write the story of the *Karluk* and her men from your leaving the ship in September, 1913, until our rescue by the *King and Winge* and our transfer aboard the U. S. Coastguard *Bear*. I shall do so to the best of my memory.

Shortly after your departure [September 20, 1913] the wind started to breeze from the northeast, gradually freshening to a gale before morning. At daylight we found that we were drifting to the west with water about two miles from us inshore. There was no noticeable strain on the ship for several days until we got off Point Tangent. There we began to get the pressure and the ice commenced to ridge up pretty close to the ship and we got several hard squeezings but nothing too hard. As we drifted toward Point Barrow the wind dropped almost to a calm, the current slackened, and by the time we arrived off Cooper Island the ice stopped and there was no pressure. This was the last week of September. During our stay off Cooper Island no one talked about wanting to go ashore except one of the natives, but the Captain refused to let him go. We were so near the land and the ice was so steady that any one could have gone ashore who tried. [According to the accounts of the natives ashore who watched the ship, they could see her ropes with their bare eyes. She was probably from three to five miles from land and was nearly stationary for several days.]

About October 4th or 5th a southeast wind gradually freshened to a gale and we started drifting northwest. We continued on that line through October, the water deepening until the sounding machine showed 900 and 1,000 fathoms. During this month the Captain had some drag-nets set up and he also made several himself for Mr. Murray. These drags were continually on the bottom until the ship was crushed. The nets were hauled up at noon and emptied and reset. Murray got what he called "lots of interesting specimens" Several times during October the ice cracked in such a way that we had open water close to the ship. It was within fifty yards at one time. During October and November the natives killed between forty and fifty seals, one small bear and five foxes. Early in November easterly winds blew and set us to the south and southwest until about the 20th of December, when we finally landed up against the Siberian shore ice.

During the month of November the Captain had all the deck-load of kerosene and lumber placed on the ice and also all the hard bread, rice, beef, pork, the sleds and canoes. The crew removed the wooden cases from the pemmican and sewed it up in drill to lighten the loads in case of emergency. The Captain put me to work at making two canoe sleds [for hauling the Eskimo-type skin boats or umiaks]. According to his directions, I made also three sleds of the type used by Peary. Two of these sleds were eventually used for going ashore in Wrangel Island and one was used by the Captain for his Siberian trip.

During the drift the scientific staff were engaged in their various occupations. Murray and Beuchat were writing continually, the Doctor was making up clothes from Burberry for all the staff, and McKinlay was engaged in meteorology. Malloch had a theodolite set up on the ice and every night when the sky was clear he would be on the ice taking sights and keeping the ship's position well in hand.

About the beginning of December the Captain had the fires drawn and the engines cleaned up. That done, the engineers made ice picks and cooking pots. There were a lot of new aluminum cooking pots of all sizes in the outfit of the ship but the Captain considered them unsuitable, preferring cooking pots made by cutting in half a five-gallon Standard Oil kerosene tin and having a tin lid made to fit. These were said to be exactly like the tin pots used on the North Pole expedition by Peary. Boxes were made for the primus stoves, the ammunition was done up in packages of three hundred rounds each, one package for each rifle, and the men were issued deerskins, which they were told to tan and make into clothes for themselves. They knew nothing about working deerskins and you should have seen the clothes they made. When they put them on, went out into the cold weather and stooped or did anything, split went their pants or shirt! In the meantime, the native woman was making deerskin boots for everybody. I think she made sixteen or eighteen pairs up to the time the ship was crushed.

One night during the early part of December there was great excitement on board. The ice began to move and did considerable crushing. All hands turned out and got the dogs and sleds on board. But after an hour or two it quieted down again and at daylight we found we were in a big basin with ice crushed in ridges all around us.

During this month there was considerable talk of Dr. Mackay, Murray and Beuchat leaving the ship and making their way to St. Petersburg. The Captain used to lie in his bunk nights and listen to them talking it over. The Doctor seemed to be the leader and was advising the rest to go as soon as possible.

About the middle of December land was sighted to the southwest, a long ridge of mountain tops which later proved to be Wrangel Island. Herald Island was on the same line and at our distance (between fifty and seventy-five miles, I should judge) we were unable to distinguish one from the other. From the 15th on to the time that the ship was crushed we were jammed up against the Siberian shore ice, but as the wind was continuously from the north to east, we were slowly grinding along to the west. Every few days we would have a scare; the ice around the ship would split for a few feet and open up a little so the ship would groan, and then it was all quiet for days.

During all this time the two natives and myself were sealing in the cracks which had opened. We got between forty and fifty seals, so we were well supplied with fresh meat. When we left the place where the ship was crushed we still had twenty seals left.

There was nothing of a stirring nature as the days went by. We could still see the mountains every clear day.

The evening of January 4th the ship cracked like a shot and brought everybody out on deck with a startled look. We found the ice had split with a narrow crack from the ship's stem right out ahead. When we returned to the cabin there was a great discussion started among the scientific staff. Each one had his theory about it but it seemed to be finally decided that the tides were at the bottom of the trouble. The Doctor asked me what I thought of it and I answered him that, as the wind was blowing pretty fresh from the north, I thought that might account for the pressure. Whenever there was pressure during our drift there was always a discussion about it.

The Captain said: "Look out for next Saturday; the chances are that we will get a bad one on January 10th." The next Saturday about five A. M. all hands were awakened by a loud crashing and groaning of the ship and for a few minutes she was writhing in her ice dock as if her last hour had come. But after a while things quieted down. The Captain said, "Look out for this evening at the turn of the tide," and he made another good guess. It happened to be blowing rather strong from the north at this time and everybody was on the alert that evening. During the day the Captain had all the snow removed from the decks—an inch or two of snow—to lighten the ship. This was so she might rise more easily under pressure. There were a few other small things attended to for the safety of the crew.

About seven P. M. we got a strong squeezing which seemed to lift the ship several inches. Fifteen minutes later there was a loud cracking of timbers, the ship heeled to starboard several degrees, and water commenced to pour into the engine room. A few minutes later the Captain gave orders to abandon the ship.

The only food that was taken out of the ship at this time was all the Hudson's Bay and Underwood pemmican. The Captain ordered the Danish and Norwegian pemmican to be left in the ship. He detailed me to look out for all the bags of clothing that were in Mr. Stefansson's cabin, and also the rifles, ammunition, etc. I told the Captain I would like to have a shotgun ashore in Wrangel Island, but he said that explorers did not use shotguns. I told him we were not going ashore to explore but to live and that I knew of a crowbill rookery on Wrangel Island. If we were planning to live there during the summer I thought a shotgun would be more use there than a rifle. So it was finally decided we would take a twelve-gauge shotgun, but the ammunition that was passed out of the ship with this shotgun was all sixteen-gauge loaded shells and the mistake was not discovered until too late.

After the pemmican and other stuff was on the ice, the Captain ordered me to take the two Eskimos and build two large houses. The walls were made of boxes of bread and sacks of coal reinforced with snow and covered with the ship's sail that had been placed on the ice several weeks before. We lived in those houses very comfortably until the camp was deserted several weeks later.

During this time a blizzard was blowing from the north. As fast as anything was placed on the ice it was covered with the drifting snow. I put an extra case of .30-30 ammunition on the ice, as the two natives had each a .30-30 rifle. Later these cases of ammunition could not be found, nor yet a case of 6½ mm. [Mannlicher] ammunition.

There was plenty of time to save everything we wanted from the ship, for she was held tight in the ice all that night and the next day until three-thirty P. M. During the last several hours no one went aboard except the Captain. A few minutes after three-thirty P. M., the ship began to go down by the head until she was almost perpendicular. Then she suddenly straightened out on a level keel and slowly sank with the Union Jack flying. The depth of water was thirty fathoms.

For several days after this all hands were engaged getting ready for the trip ashore, fixing up boots and socks and sleeping gear, making these the best they could out of deerskins. There were three sleeping-bags for the Doctor, Murray and Beuchat. The rest of us had drilling bags with one small fawn skin to wrap around our feet. I found this fairly warm. About the middle of January the Captain sent three sled-loads of provisions and all the dogs (over twenty) with the first and second officers and two sailors with orders to go to Wrangel Island and form a base and build a house to be ready for the ship's company whenever they should arrive. [The party consisted of First Mate Anderson, Second Mate Barker and the Sailors King and Brady.] Mamen and the two Eskimos were to return to "Shipwreck Camp" with the teams after the Mate's party reached the land. When the sleds started the crew went with them for a mile to help them over some rough ice and then we returned.

During that day poor Malloch froze his legs. He was wearing a pair of bearskin breeches which came just to his knees and were as stiff as a board. There were about three inches bare between the top of his boots and the bottom of his trousers. I told him before we started, "You are going to freeze your legs, Malloch, if you don't wrap them up." But Malloch said that that was the way the Captain had told them they dressed in Greenland, so I said, "Go to it, old man." When he returned he was so badly frozen that he was laid up for several days.

I think it was sixteen or seventeen days before the teams returned. During that interval the Captain had a line of depots made at distances of one, two, three and four days' travel from Shipwreck Camp. These contained food and oil. He asked me what I thought of his doing this and I told him we would never find them, or at least the chances were we wouldn't, as the ice was on the move all the time. He had the teams make the trips just as far as they could travel in one day and return the next.

I forget who went on the first trip but on the second one were Malloch and Munro and they had a mishap. It was before they had cached their loads. They started across a patch of young ice and got about ten feet from the strong ice when their sled broke through and what they didn't lose they got wet, with themselves in the bargain. So they dumped their load and started back to Shipwreck Camp, but night overtook them before they reached it, as they were about thirty or forty miles away when they broke through. When they camped, they had a very pleasant night of it by their own account. I forget whether they lost their primus stove or not, but if they didn't it would not burn, as everything was frozen up. They had to stand up all night and move around to keep from freezing, waiting for daylight, which in the early part of January was quite a long wait. The next day they got to us more dead than alive. I forget who it was made the next trip—the last. I was busy finishing the Peary-type sleds, so I made no trips.

Every night during the time the sleds were away we had a grand illumination to show the way to Shipwreck Camp. But of course nobody ever arrived at night, for it was simply impossible to travel over that ice when it was so dark you could cut it. Furthermore, it was too dangerous. During all these bonfires we burned the Peterborough canoes, the whale boats and most of the drums of oil and gasoline, and the case oil [kerosene in cases] besides. It is a wonder we didn't blow ourselves to eternity. I reminded the Captain of how he had burnt all the hair off his face last winter when he put a package of Eastman's flash papers in the cabin stoves, and I advised him to look out that nothing worse happened.

I think it was February 4th or 5th that we heard dogs howling several miles from camp. Some of the men went out to look and shortly after the sleds returned to camp with the news that they had left the Mate's party on the içe about three miles from Herald Island with a lead of open water (three miles wide) between them and the land. They had one sled, three sled-loads of provisions and no dogs. The feet of one of the four were badly frozen already. I thought this a bad position for the Mate's party to be in, for if the ice started to crush, which in all probability it would do, it was all off with his outfit. They might save themselves but they wouldn't save much of their gear. I had advised the Mate before he started that if they wanted to leave him with water between him and the land, and no dogs, if I were in his place I would refuse to stay and would return with the dogs to Shipwreck Camp. He said at the time he would do so. I was told now that when Mamen was about to turn back with the dogs the Mate wanted to come with him but gave it up because one of the sailors made fun of him, saying, "Give me a rifle and I will walk to Point Barrow." The Mate then said he didn't like to have it told that he was the first to retreat. Poor fellow, it would have been better if he had done so.

There was great excitement in camp that evening. The Doctor's party were planning to start out on their own account and were anxious to get news from Mamen's party. Some said that if the Doctor wanted to leave the rest he had better act on his own ideas and that we should not give him any information. I did not agree with this, for it seemed to me that if no steps were taken to prevent him from going, it was not fair to withhold information which might help his party on the road. The next day the Doctor's party got ready and packed their sled with fifty days' rations for four men. The Captain told them they could have anything they wanted. When the Doctor asked for dogs, the Captain said: "Not one dog; if you go off and leave us you play dog yourself."

That evening Murray sent for me, asking me what I thought of the prospects of their party reaching land. I told him I did not think there was anything wrong with it. The land was in plain sight and I thought it could be easily made. In their case it would not be so easy, however, for they had no dogs and when they stopped pulling the sled would stop. In our case it would be different. When we came to a smooth place we could let up and the dogs would pull the load along. I thought it would be a good idea if they waited for us and we all went together, for the plan was that just as soon as the sleds returned from their next trip we would all go. But they said they didn't want to wait. Just before I got up to leave, Murray asked me to go with them. I told him I was sorry but I would wait for the rest and would go when the Captain was ready to start us off. I thought they were very foolish if they did not do the same, for we could help one another if we got into difficulties. He objected that our plan was different from theirs. We were going to spend the rest of the winter and spring on Wrangel Island but they wanted to continue to the mainland, and were going to try to go straight through to St. Petersburg. So I wished him luck. Next morning at break of day they started.

I think it was the third morning after this that the Captain sent two or three sleds with loads of provisions to Herald Island with the intention to join the Mate's party. What the orders were I don't know except that they were to go to the Mate's party and return as soon as possible. The party was in charge of Mamen, with a support party to help them off a few miles. Before dark they returned with the news that Chafe, the cabin boy, had taken Mamen's place and Mamen was returning, for he had sprained his knee. Shortly after this Mamen hobbled up to camp with two men assisting him. He was laid up for several days.

It was about the 10th of February the sleds returned with the news that when they arrived at Herald Island they found the ice had done considerable crushing. They could discover no sign of the Mate's party. They seemed to have disappeared off the face of the earth. The search party camped about three miles from Herald Island, for they could not get ashore because of water and slush ice. Next day they hunted for signs of the Mate's party but found none. During the next night the ice commenced working. The piece they were camped on was a small, solid cake, but the next morning at daylight they found they were adrift with water all around them, going to the west at a mile or two an hour. [Some similar thing had probably happened to the Mate's party.] After drifting a few hours, their cake touched the pack and they were able to get off. One of their sleds collapsed, so they cached their load and returned to Shipwreck Camp. On the return trip they met the Doctor's party and found them in pretty bad shape. The sailor, Morris, had blood poisoning in one of his hands and poor Beuchat had frozen both feet from the ankles down and both hands from the wrists solid. He couldn't get his boots and stockings on or his mittens, and he was in a very pitiable plight. The most cheerful one seemed to be Murray. The Doctor appeared all in. They were double tripping their stuff and Beuchat remained at the camp to look out for their things. Chafe wanted him to return to Shipwreck Camp but Beuchat would not. He knew we could not do anything for him there. We did not even have any medicine, for when the ship was crushed no medical supplies were taken off except a small traveling medical chest brought off by the chief engineer. The Doctor's party was never seen or heard of again, nor any trace of them found.

That evening the Captain informed me that on the 12th of the month I would leave with the two engineers, two firemen, Malloch, Chafe and one sailor. We would have two sleds and would go to Wrangel Island. The chief engineer was in command. The Captain told me he would not put me in charge as the Government wouldn't stand for it, as I was inferior in rank to the engineer. But I was to advise the engineer what to do.

The next day we got everything ready. We had a lot of collapsible iron stoves for burning driftwood and I wanted to take two of them along to Wrangel Island so we could use wood for fuel. They weighed only a few pounds. The Captain did not approve of this, however, and gave us orders to burn kerosene instead of driftwood. We started with a light load and we were to replenish our loads as we went along from the depots which had been made at the Captain's orders at various intervals towards land. I should judge we had nine hundred pounds to a sled and five dogs. We had one Mannlicher rifle for each sled and three hundred rounds of ammunition for each rifle. We also had one .22 caliber rifle with five hundred rounds.

About nine o'clock February 12th the chief engineer's party started from Shipwreck Camp towards shore with me in it. We tried to follow the old trail made by the sledges when they were carrying out the supplies which had been cached in several depots at varying distances from Shipwreck Camp along a line running towards shore. We found the trail broken by ice movement and difficult or impossible to follow. In some places we would come to where the trail ended abruptly along a line of ice movement and after long search we might find it two or three miles to one side or the other. Usually it was found to the left, for the farther away from Wrangel Island the ice was the faster it was drifting to the west. Our progress was pretty slow, for in addition to searching for the trail we had to chop a road through pressure ridges frequently with the pickaxes. Our reason for trying to follow the old trail was to see if we could find any of the depots.

When we arrived in a locality where we thought one of the depots ought to be, we stopped for several hours or perhaps over-night to make a search. I did not expect to find any of them but we did find one which by good luck was in the middle of an old ice floe that had escaped crushing.

The second morning out I shot a small bear but the rest of the boys would not eat it as they weren't hungry enough yet, so I fed it to the dogs. This was better for them than the one-pound pemmican ration.

The morning when we left camp the wind was freshening from the northeast. It gradually increased to a blizzard and kept up for five or six days. In the morning of the sixth day we arrived at the pressed-up ice where the edge of the landfast floe meets the moving pack. This proved to be about forty miles from Wrangel Island. The ice was crushing and tumbling so that we just had to wait for it to stop. I picked out what I thought was a good cake for camping. I then went to have a better look at the ridge and found the ice in a frightful condition. I got on top of a small pinnacle which was not moving just then and found the ridge extended about three and a half miles through such ice as I had never before seen in my twenty-five years' living in this country. Nothing could be done till the crushing stopped. I had grave fears for the Doctor's and the Mate's parties if they got caught in this.

We camped and waited for the ice to stop crushing. That evening about eight o'clock we were all in our blankets and I was listening to the ice groaning and vibrating when, snap! the ice cracked right across the floor of the house. We tumbled out as quickly as we could, packed the gear on the sled, hitched up the dogs and got everything ready for retreat. I found we were surrounded by lanes of water, but, as we were two or three miles from the ridge, I thought we wouldn't do anything until daylight unless we had to because it was so dark you could cut it and it was impossible to see where you were going. So we walked around to keep ourselves warm until daylight. When it was light enough we started to climb back. Then the ice began to get its work in, splitting and opening up in all directions. But there was no crushing where we were. About 4 P. M. we managed to get back to the solid pack and picked a place to camp.

Next morning I heard more crushing. We again packed up. We moved southeast a few miles and then south and camped about two miles from the ridge. The Chief and I walked down to have a look at it and found it still crushing a bit, so we concluded to wait another day. We knew the Captain's gang would be along shortly. All hands could then pitch in and cut our way through, for we knew the ridge was solidly grounded on the sea bottom and once inside it we would be safe. It certainly was there to stay till summer. It seemed to me this would have been a good place to stop and make several trips back

THIS LEAD HAD FROZEN OVER.

WILKINS TAKING MOVIES OF SPRING WHALING—BARROW, ALASKA.

to Shipwreck Camp to get all the food we needed and take it ashore at our leisure. When on our way back from this inspection we saw the Captain coming from the north. I walked ahead to meet him and tell how things were going. After his party had camped we walked back to the ridge to look at things, and concluded to start cutting a road the next morning if the movement had stopped.

Next morning all hands pitched in with everything they could work with. I now told the Captain I thought it would be a good idea to send a couple of sleds back to Shipwreck Camp and rush some grub over the ridge and we could return from the beach and get it at any time. The Captain did not see it that way. He said he didn't want to waste any time as he wanted to get away from Wrangel Island as soon as possible and that we could later make a trip from the beach back to Shipwreck Camp. I could not understand this, for his plan was that we should live in Wrangel Island on pemmican and we did not have rations of a pound of pemmican a day for more than a month. Two or three hours later he changed his mind, came to me and told me to quit work and get ready to go back to Shipwreck Camp in the morning with Chafe and McKinlay and three dog teams to bring three cases of gasoline, sixteen hundred pounds of pemmican and nothing else.

We started next morning and arrived at Shipwreck Camp at 6 P. M. I should judge it was forty miles. Next day we loaded the sleds and fed the dogs all the Hudson's Bay pemmican they could eat. They had been working on a pound a day of Underwood pemmican, which was a starvation ration, and they were now nothing but a frame of bones, poor things. We loaded the sleds with Hudson's Bay pemmican, as everybody but the Captain liked that the best, and next morning we started on the return journey. The dogs were pretty weak with their previous starvation, so we later had to throw away about one hundred pounds from each load, and we traveled pretty slow at that. It took us three days to cover on the return journey what we had made in one day coming out.

On the second day about three P. M. I was behind the team when my dogs stopped, turned in their tracks, and commenced growling, their hair standing up stiff. I looked behind me and there was a bear about six feet from the sled. If the dogs hadn't smelt it I should never have known what hit me, I guess. They made a break for him and he backed off a few feet, giving me a chance to get my gun and give it to him in the head. We found him about ten feet from tip to tip, with three inches of blubber. We made camp, for it was getting dusk.

While I was tinkering at the camp and the other boys were cooking tea the dogs commenced a racket. I looked up and there was a big bear alongside the sled between me and it, sitting on his haunches and making passes at the dogs, trying to hit them. I ran around the sled and got my rifle, which was about four feet from the bear. We were not needing any bear meat, so I tried to scare him off, but he was too scared of the dogs to pay any attention to me. As I did not want him to kill any of the dogs I finally had to shoot him. As I shot I heard another growling match and another bear piled over a small ridge that was about ten feet from the sled. He had blood in his eye and went for the dogs as if bent on murder. I had to kill him, which closed a pretty good day so far as bears and dog feed were concerned.

Next morning I opened up the bears to let the gas escape, expecting the Captain would send back for the meat for dog feed. About noon as we were drawing near the ridge, two men came running to meet us. They were the Chief and one of the sailors, who helped us over the ridge to camp. After I told my story to the Captain he said, "All right, to-morrow morning you will go back to the bears and bring two loads of meat." I suggested going to Shipwreck Camp and bringing two sled-loads of hard bread and rice, which would last us along with the pemmican until it was time for ships to come in the summer, but he did not approve of this. He said the Chief would make a trip out to the ship when we got ashore. "Yes," I said, "that would be all right providing we don't have a south wind in the meantime."

The next morning Kurraluk, McKinlay, Mamen and I went back for bear meat while the rest were double-tripping stuff towards the beach. We arrived there the 12th of March, having had a fairly good road the forty miles from the ridge. There was plenty of driftwood, which was a godsend to us though it would have been worth a great deal more had we had our sheet-iron stoves. From this time and right through the summer we had a lot of trouble with our cooking gear. The aluminum pots which we threw away on leaving the *Karluk* would have been good as new after ten years of use, but our pots which the engineers had made to replace them out of kerosene tins had holes in them before the Captain left. The tin was fragile, the soldering was bad, and between use and rust they were soon in pretty bad condition. [Bartlett mentions the giving out of the tins used for cooking, on page 172 of "The Last Voyage of the Karluk."]

The next morning the Captain sent one of the Eskimos and me out to look for the Mate's and the Doctor's parties but no sled tracks or other signs were to be found. Big fires were made with wet driftwood to cause smoke which they could see a long way if they were there to see it. Arrangements were made that the Chief should first make a round trip to Shipwreck Camp and then go to Herald Island to look for traces of the lost men. The morning of the 17th the Chief left with two teams, a sailor and a fireman, for Shipwreck Camp, while the Captain and one of the natives got ready for their trip to East Cape. They started the next morning with fifty days' rations for the men and thirty days' for the dogs.

Malloch wanted to go with the Captain but he wouldn't take him, saying he couldn't stand the trip. This broke poor old Malloch all up.

But I think the Captain was right in that case. He could not stand the trip, for his feet had been pretty badly frozen on the way in from Shipwreck. When he went to Rodgers Harbor, which he did the day after the Captain left, he froze them badly again. He did not understand how to look after himself. Here is an instance of it: One morning during our trip in while we were breaking camp, I noticed Malloch standing still in one position for twenty minutes or half an hour. I asked him, "What's the matter, Malloch, are you sick or what?" He replied: "Sick, no. The matter is I'm standing here because the Captain told me when I come out of the camp in the morning to stand still until my boots are frozen hard and then they would be all right for the day." I asked him how his feet were right now and he said they were pretty cold. I told him he had better get a move on or he would have no feet to get cold. He was the only one of the whole party to freeze his feet on the trip in.

The night of the 18th the Chief returned to us with the news that there was an ocean of young ice between the ridge and the pack. There was no use trying now to reach Shipwreck Camp but he would go out and try again in a few days. In the meantime he and McKinlay would make their trip to Herald Island. They were gone five days and said when they came back that nothing could be seen of the lost men. About the first or second of April the Chief made a second start for Shipwreck Camp, accompanied by the same men and Chafe in addition.

Shortly after the Captain left, Mamen, Malloch and the steward went to Rodgers Harbor to live through the summer. McKinlay was to join them after he got back from Herald Island. The native went along to help them but was to return to us after he had assisted them in making a camp. All this was according to the Captain's instructions. About the end of March the native returned having done these things. On the way back he killed a female bear and two cubs.

Five or six days after the Chief's party left, the native and I saw them in a mirage wandering about as if lost. On the ninth day the Chief and Williamson, the sailor, returned, saying that Chafe was lost on the ice. Williamson's feet were badly frozen and the Chief's wrists slightly. They brought the glad tidings that they had lost everything they started with, dogs, sleds, personal effects, guns and ammunition. I found out now that they had taken a large quantity of ammunition with them. I never knew why. I had two pairs of fur socks, boots and shirts that I had brought aboard with me from Point Barrow. I gave the Chief one each of these and one pair of deerskin mittens, whereupon he said he would return to the ridge and see if he could find Chafe. He left with a small sled the Eskimo had made for him and a little tea and pemmican but he returned the next day without finding Chafe.

This left us in a pretty tight fix, losing the guns and ammunition, and we didn't know what to think of Chafe. But that night he came in to camp, pretty well all in, with three dogs fastened to him that were pulling him along. He told this version of the accident:

His team had been ahead when they struck some young ice just outside the ridge. The Chief had wanted to cross the young ice in a direct line but Chafe had tried it, found it not strong enough, and had gone around by another way where it was stronger. The Chief tried to go direct, his sled broke through the ice, and he and the sailor fell in the water as well, getting their feet and hands wet. They were able to climb on the ice but left the sled and dogs to sink where they were. No move was made to save the rifles and cartridges. Meantime the plunging of the dogs and the working of the sled had smashed up the only way open for Chafe's return. At this stage the Chief and sailor had gone back, leaving Chafe on the other side of the open water. When Chafe finally got back on the landfast ice at the end of the trail which led ashore, he stayed there one night. He then came ashore with the three dogs, thinking the others would follow.

During the absence of the Chief, the Eskimo and I got two more bears and a small cub. These were the last bears we got on Wrangel Island. The meat was divided up, so much for each camp according to the numbers.

As there did not seem to be much game near the shore, the Eskimo and I went out to the ridge and made camp with a tent that we found there on the sled Chafe had abandoned. [Apparently the rest of Chafe's dogs were lost, as Hadley does not mention them.] Next morning bright and early we went out to the open water about three miles beyond the ridge and got five seals. For two or three days after that the sealing conditions were bad, so the native decided to go ashore with two seals and bring back a load of driftwood to burn. He took the sled we had come with and two dogs, leaving one with me to give me warning in case of the arrival of a bear. He intended to be back in four days.

That night I slept in my sleeping-bag and the dog was fastened to the sled just outside the door. About four A. M. I was awakened by his barking, and that meant a bear. I tried to get out of my white drilling sleeping-sack but the more I struggled the harder I stuck. Finally, when I got out to my gun I saw the bear and two small cubs disappearing over a ridge. I swore, "No more sleeping-bags for me," and for about ten days I slept on top of the bag, but no bears. Then one night it felt pretty cold and there being no bears, I got into the sleeping-bag. Of course, the same thing happened, even to the hour of four A. M. I finally freed myself from the bag in time to get one shot in as the bear was disappearing over a ridge. I then cut the dog loose to see if we could get the bear that way. It had been snowing and was pretty dark and both the dog and I had several hard falls. The rough going did not seem to bother the bear and he got away.

The native had now been away twice as long as he said but I decided to give him four or five more days. It was blowing hard from the south, and I knew that when the wind dropped there would be open water outside the ridge, with plenty of seals. But I was beginning to worry about the native, so I set out on the fourteenth day. I got to the beach at seven A. M. and found everybody asleep. It seemed the native had loaded up with wood as he had said he would and had started for my camp when he got severely snowblind five or six miles from land and was unable to proceed. After being sick there for some time he had returned ashore. Shortly after this McKinlay left for his camp at Rodgers Harbor, where he was to stay according to the Captain's orders. He was gone several days and came back with the news that Malloch had died and that Mamen was sick and swelling up, which most of them were doing at our camp, too. He said Mamen could not eat the Underwood pemmican and had asked him to go to Skeleton Island, some twenty or thirty miles from our camp, to get him a tin of Hudson's Bay pemmican. McKinlay had tried to do this and had got lost to the extent of not finding Skeleton Island, whereupon he had continued along the land until he came to our camp. He was snowblind and played out, so he got the Chief and one of the firemen to return to Rodgers Harbor to look after Mamen, as Templeman (the steward) was unable to do it.

From now on the seals began to come out of their holes to sun themselves on the ice and the native and I occasionally got one, which was a change from the pemmican. Birds would fly over us in flocks but we rarely got one of them on the wing with our rifles. It was then we felt not having the shotgun.

The second of June McKinlay, the Eskimo family and I left for Cape Waring where I knew of a crowbill rookery. McKinlay was to take back the sleds and team of three dogs to fetch the rest, who were all sick. Before we arrived at Cape Waring we were met by the Chief and the firemen from Rodgers Harbor with the news that when they arrived Mamen had been dead and the steward nearly out of his head with the two dead men beside him in the tent. They had come back to get their effects and return to the harbor.

Thus far we have kept to Hadley's account except for the matter enclosed in brackets. It is verbatim except where it has been necessary to draw together in one place for the sake of clearness information scattered over several paragraphs. A few sentences have been supplied for full clearness, but only according to Hadley's verbal statements to me.

It is now necessary to summarize what he says in various parts of his report and what he told verbally to bring out the cause of death of the men, for he does not express himself to make the meaning clear to any except those of us who are familiar with the circumstances.

The trouble appears to have been largely with the pemmican. We have told in other parts of this book how unsatisfactory we found it both for man and dog feed because of the large amount of salt, the lack of fat, and the high proportion of water. One pound of pemmican, if approximately half is fat and half lean meat thoroughly desiccated, gives a ration sufficient for a small dog of the Greenland type. It is well known that the caloric value of fat per pound is more than double that of any other food element. If a pound of pemmican which is half fat is considered barely sufficient for a dog, it becomes clear that a pound of pemmican nearly devoid of fat must be insufficient. On other branches of the expedition we managed to use the pemmican by feeding it half and half with blubber, which made it a satisfactory ration except for the saltiness and the water. But on the way ashore to Wrangel Island the dogs had been fed with only a pound of pemmican and no fat, except for brief intervals when they lived on bear meat. At these bear meat periods Hadley says they improved in strength and condition.

The pemmican was not only insufficient as a ration but led to illness, both of men and dogs. This does not mean that there was anything poisonous about it. It is merely an illustration of the generally accepted fact that a diet consisting almost entirely of protein leads to "protein poisoning," which is poisoning only in the sense that illness results because the kidneys are overtaxed with trying to excrete the excess of nitrates. This leads to nephritis or derangement of the kidneys, of which a common symptom is swelling of the body beginning usually at the ankles. Although he was not exposed to this diet as long as the rest, Bartlett developed these symptoms about the time he got ashore in Siberia, having lived mainly on protein from the time of leaving Shipwreck Camp till he got to the mainland where he was able to travel from house to house, living on ordinary groceries and native meats.

My own party lived chiefly on protein for a few weeks the winter of 1909-1910. An account of this experience and the early stages of the sort of illness that is sure to develop is found in "My Life With the Eskimo," pages 140 ff., with scattered references to the same subject elsewhere in that book. Having to live mainly on protein (lean meat) is an occasional experience of many Indian tribes in Canada and is referred to by them and the Hudson's Bay men as "starvation," no matter how much lean meat may be available.

Hadley noted in Wrangel Island that the swelling and other symptoms of illness developed most rapidly with those men who ate the most pemmican, and in consequence the least seal or bear meat. The situation was not thoroughly understood at the time even by Hadley, and his own escape and that of the Eskimos was not due to a thorough understanding but merely to the general notion that fresh food was better than "canned stuff." Also it was a matter of taste. The Eskimos and Hadley preferred the fresh meat, and McKinlay seems to have fallen into their tastes early, which kept him freer than any of the others from the symptoms of the disease—wholly free, I believe. Hadley and the Eskimos were entirely free of every symptom of nephritis.

In closing this summary I must emphasize again that lean meat, whether classed as pemmican, tinned beef, or anything else, is not poisonous in itself and makes a suitable ingredient of a diet where carbohydrates or fats play a part. But the foods saved from the *Karluk* were pemmican, hard bread, tea, and tinned milk. The hard bread soon gave out, the milk was never intended as anything but a flavoring for the tea, and the tea itself was, of course, of no consequence as food. The men who became ill and died had lived, therefore, largely on the pemmican. Unfortunately it seems, too, that the prejudice against "blubber" prevented them from eating the fat that was available from the seals. Had they had bacon, butter, lard or some fat to which white men are accustomed, they would doubtless in merely following their tastes have eaten enough fat to protect them largely or wholly from nephritis.

We found [Hadley continues] millions of ducks and gulls at Cape Waring. We immediately went to the rookery, a matter of three miles from camp, but there was not a crowbill in sight though there were plenty of gulls. I shot twelve gulls, one for each of the party, and then returned to camp where McKinlay was waiting for me to return with the team to fetch the sick. I put one gull for each of them on the sled and he started back. The native caught a seal during the day, which put us on Easy Street for the time. Next day McKinlay returned from our old camp with the rest and I thought a few days' feeding on ducks and duck soup would bring them around all right. They were swelling up more and more all the time. I put this down partly to the fact that they lay too much in their houses, never going out. When they made tea they would dig snow from the side of the house for the water.

We got ducks and seals most every day and later three ugrugs (bearded seals) and one small walrus. Eventually I told the native to build a small umiak so that when the ice left the beach we could go after walrus, he and I. But he thought a kayak would be better so he built one, covering it with sealskins. Later we wished we had an umiak instead, for when we had nothing to do and could get no more ducks we could see walrus drifting by offshore by the hundreds sleeping on the ice cakes. The Eskimo was too scared to go after them in the kayak, for he was always used to hunting them from an umiak. With a boat there is no trouble about getting meat. We had not tried to save or bring ashore the big umiak on the *Karluk*. It was the intention to let her sink with the ship, but after the *Karluk* sank she was floating around in the water and I had got permission from the Captain to cut out of her a few pieces of leather for boot soles. These proved very useful later in Wrangel Island, but if we had brought with us the boat itself we would have had no trouble in killing walrus enough to support us for years on Wrangel Island.

The morning of the 25th of May I was lying half awake when I heard a shot. I took no notice of it, for I thought it was Chafe shooting ducks. After a few seconds I heard the Second Engineer sing out, "Oh, call Mr. Hadley; Breddy has shot himself!" I was up in a flash and into the other tent, about ten yards off. As I got into the tent I asked, "What is the matter here?" The Second Engineer was sitting up and pointing at Breddy who was lying on his back with one arm stretched along his side and the other across his breast, with a bullet hole in his right eyelid. I picked up the gun the shooting had been done with and said, "Have you another gun in here?" "Yes," was the answer. I said: "Give it to me and I will look after it. You don't need guns in here, anyway. You and Williamson are scarcely able to move." He gave me with the gun three cartridges, all that were left of one hundred that they had landed with from Shipwreck Camp, and not an animal killed with that gun.

About this time I made a ladder from driftwood to get eggs from the cliff, but after I packed it over to the rookery I found it about twenty feet too short and could get only twenty-five eggs. Later I made another which was about the right length and McKinlay, the Eskimo and I took it over and tried to raise it, but it was too heavy for us and we had to abandon the idea. Tens of thousands of eggs and we could not get one of them! I used the short ladder in every place that I could and got small lots of fifteen and twenty and twenty-five eggs.

About the second of July there was a strong northwest wind which smashed and ground the ice in heavy ridges on the northwest side of the island, rolling it up against the cliffs seventy or eighty feet high. But July 3rd the wind turned to the southwest, blowing strong, and the ice went off from the beach, ending our sealing and duck shooting.

The middle of August the ice came in again. All the bights were filled with loose ice which did not cement together for several days. This was a bad condition for any kind of hunting, so we went on a ration of two tablespoonfuls of fermented seal oil twice a day for three weeks. We had a little dried meat which we were saving for an emergency. After the ice got strong enough the native and I went off rustling and in the small holes we found lots of young crowbills with the old birds. The ammunition was getting low and we could not afford to shoot, so we got a net that we had been using for fish, though we never got any, and brought it out to use as a seine. The first cast we got about fifty birds and in all we got about five hundred, so our hungry days were temporarily over.

Hadley here leaves out of his manuscript a part which he emphasized verbally. They were saving the dried meat which he mentions with the idea of using it when the ice was strong enough to allow them to cross to Siberia. Being familiar with this coast Hadley knew that if they once stepped on the mainland their troubles would be over, for there are dwellings of hospitable natives every few miles along that coast, and traveling along it you can easily sleep with one household, have lunch at noon with the second, and reach the third settlement by night. There seems no doubt that the healthy members of the party could have done this, but it is questionable how the invalids would have fared. Of course, they could have been cured by a month or two of fresh meat diet if fat had been used in reasonable proportions with the lean meat. It seems doubtful that this could now have been accomplished, for the autumn is by no means so good a hunting time as the spring. There were now only a few men able to help themselves and to wait on the others.

An important part of discipline that had not been enforced during the summer was the saving of ammunition. As mentioned incidentally in the narrative above, they used to fire with rifles at birds on the wing. Hadley's statement that they got some occasionally indicates that a great deal of ammunition must have been spent in this way. Much more ammunition was spent on small sea birds. Hadley estimated there were about two hundred rounds of ammunition left in the island early in September. It appears doubtful therefore that many would have lived through with health and strength sufficient to cross to the mainland. It can be said of most of the party, if not all, that their lives were saved by the *King and Winge.*

The first part of September [Hadley continues] the ice was strong enough for us to go three miles from shore, where we saw several bear tracks and several seals but no walrus close enough to shoot. As the season was getting late and no ship had appeared, we thought we were in for another winter and would have to be careful of our cartridges. I had about forty-five and the native around fifty, so we decided we ought not to shoot anything but bears and walrus unless we were pinched.

On the fifth of September we had a blizzard from the northwest which made snowdrifts ten feet high. The sixth the weather was fine and the Eskimo and I went out on the floe, as our ducks were getting low, and I was lucky enough to get two seals. When we came ashore in the evening we got the welcome news that the Eskimo woman had caught about fifty pounds of tomcod, the first we had seen, so we went to sleep quite happy with great expectations for the morrow.

Next morning it was blowing fresh from the northwest with drifting snow. We fished for a while with poor luck and then all hands went back to the tent. About ten o'clock the Eskimo went outdoors. A few minutes afterwards he sang out, "I think I see a ship!" I jumped up and there, sure enough, was a schooner coming along the island about twelve miles off. I told the native to run out to the edge of the ice and attract their attention and he was off like the wind. Shortly afterwards she headed in for the floe where she finally tied up, and our troubles were over. A gang of men climbed over the bow and headed for the beach.

It proved to be the *King and Winge* of Seattle, owned by Mr. Swenson, who was on board. They had along a moving picture man with his machine and he marshaled us up and down for about ten minutes, taking films of us. When that was finished we went on board where we had a bath, a suit of clothes throughout, and a good fill of good grub.

Then we started for Nome. We found the way pretty icy and when it got dark we had to tie up to a cake and wait for daylight. Next morning we continued on the same course and about ten A. M. we sighted the United States Coast Guard *Bear*. When she hove alongside she lowered a boat. Captain Bartlett came on board, heard the news and ordered us on board the *Bear,* where we were royally treated by Captain Cochrane and his officers. We continued on our way to Nome where we arrived September 13, 1914.

(Signed) JOHN HADLEY.

Up to this we have for the sake of the point of view followed Hadley's manuscript account. Hadley's story up to the separation from Captain Bartlett corresponds to Chapters 8-18 of Bartlett and Hale's "Last Voyage of the *Karluk*." At the landing on Wrangel Island eight men of the *Karluk* party were missing and probably lost. These were the Mate's party—First Mate Anderson, Second Mate Barker, and the sailors King and Brady; and the Doctor's party—Dr. Mackay, Murray, Beuchat and the sailor Morris. There were living and well, except for Malloch's slightly frozen feet, the following: Bartlett, Breddy, Chafe, Hadley, Malloch, Mamen, Maurer, McKinlay, Munro, Templeman, Williams, Williamson, the Eskimos Kataktovik and Kurraluk, the latter's wife Keruk, and their two little daughters, Makperk and Helen.

Practically Bartlett had before him now the choice of two courses. He might take the entire party directly ashore where, as he knew especially through Hadley, there is a continuous native population eastward along the coast to Bering Straits. These people are well supplied with food, for not only have they the ordinary hunting resources but they have neighbors inland who own huge herds of domestic reindeer, and there are also some traders on the coast, both Russian and American, from whom the natives purchase in the summer a certain amount of groceries for winter. There would be no problem when they once got ashore about traveling safely and comfortably eastward to the larger trading posts near Bering Straits. His chief argument against this course was Malloch's partial disability; Bartlett mentions also that Maurer had frozen his feet slightly and that Mamen still had some trouble with his sprained knee. Then there was the hope that some of the eight missing men might still be living and would possibly arrive at Wrangel Island, when it would be a good thing to have some one there to meet them.

Apart from these considerations, it would have been easy to get ashore, for the distance from Wrangel Island to the mainland is only a hundred and ten miles. When a party can rely on food at the end of the journey they need not carry with them very much. According to Bartlett's estimate, they now had provisions for eighty days. They could have thrown away fifty days' provisions. The remaining thirty would not have overloaded them and, if it had, they could have thrown away half, going with fifteen days' food and making up the rest from the seals and polar bears that are numerous in this section. The dogs were not in good condition, but they could have been fattened on fresh meat for ten or fifteen days before starting, for the winter was still abundantly long.

But the consideration of the possible arrival of the eight lost men who would find themselves in hard circumstances if the island were deserted, appears to have determined Bartlett to leave everybody behind on Wrangel Island except the one Eskimo, Kataktovik, whom he took as a companion. Before leaving, Bartlett issued the following letter of instructions:

"Shore Camp, Icy Spit, Wrangel Island,
"March 18, 1914.

"My dear Mr. Munro:

"I am leaving this morning with seven dogs, one sledge and Kataktovik to get the news of our disaster before the authorities at Ottawa.

"During my absence you will be in charge.

"I have already allocated supplies to the different parties. McKinlay has four men, Hadley is with the Eskimo Kerdrillo [Kurraluk] which makes four people, Mr. Williamson three men and yourself three men.

"McKinlay kindly made out a list for me and I will ask him to give a copy to you when you get back from your trip to Shipwreck Camp.

"You will make a trip to Herald Island to search for traces of Mate's party. On my way I will cover the coast as far as Rodgers Harbor.

"The great thing of course is the procuring of game. In this Kerdrillo will be of great assistance. Let him have his dogs and the two others so he can cover a good deal of ground; and our own parties, scatter them around so that they will be able to hunt and while away the time. Give each party enough dogs, if you can spare them so that they can better cover the ground.

"As we talked about distributing supplies thatyou bring back; give each one their proportional share. As it stands now there are 80 days' pemmican and oil for each person.

"Please do all you can to promote good feeling in camp. You will assemble at Rodgers Harbor about the middle of July where I hope to meet you with a ship.

"Sincerely yours,
"R. A. Bartlett,
"Captain, C. G. S."

March 18th Bartlett and Kataktovik with seven dogs, one sledge, provisions for forty-eight days for themselves and thirty for the dogs, started for the mainland of Siberia. They followed the east and south coasts of Wrangel Island five days and then started from near the southwest corner of the island the hundred and ten-mile crossing to the mainland. On the way over they met the ordinary traveling conditions. There were seals in the leads and abundant traces of bears. The leads, however, caused some delay. Doubtless because they had land behind them as well as in front, they met no very wide leads such as are found north of Alaska, and were generally able to deal with the ones they met by traveling a few miles to one side, where the leads narrowed enough for a crossing. March 30th they saw the comparatively low land ahead and April 4th they reached the mainland of Siberia, twelve days after leaving Wrangel Island and seventeen from their separation from the main party.

When they neared land Bartlett had some trouble with his Eskimo companion who, like every other Eskimo, feared the natives who were strangers to him. On the west coast of Alaska the Eskimos rather specialize in fearsome tales about the Siberians. There seem to have been some hostilities in the past but in the main these stories are founded merely on fear of the unknown.

Immediately on landing they found the trail of a native sled that had recently passed and after a few miles of traveling to the east they came to a house. Kataktovik was worried about what the people might do to them but they proved, in fact, exceedingly hospitable. From now on Bartlett was able to sleep in a native house at the end of each day's journey, and could secure food and even dogs by the way. Later he met white men who were equally hospitable.

But as he progressed eastward he gradually developed an illness of the same general symptoms as that from which the men in Wrangel Island died—swelling of the legs, weakness, disinclination to exercise. In going to Emma Harbor he was forced to discontinue his journey through the increase of the illness. Though he would have preferred to continue to Anadyr for the sake of trying to send out a wireless message he was forced to accept the hospitality of Mr. Caraieff, a Russian trader of Emma Harbor. A few days later there arrived Baron Kleist, the Russian supervisor of northeastern Siberia. The Baron entertained the Captain royally and under careful treatment he recovered. But the recovery was not complete until after he had received medical attention at St. Michael's, Alaska.

Captain Bartlett traveled as the Baron's guest from Emma Harbor to Indian Point, where he was picked up by Captain Pedersen of the whaler *Herman* and carried across to St. Michael's, from which he sent the following message to the Government at Ottawa:

"St. Michael's, Alaska,
"May 29, 1914.

"Naval Service, Ottawa, Canada.

"*Karluk* ice pressure sank January eleventh, sixty miles north Herald Island. Preparations made last fall leave ship therefore comfortable on ice. January twenty-first sent first and second mate two sailors with supporting party three months provisions Wrangel Island. Supporting party returned leaving them close Herald Island. They expected land island when ice moved inshore. February fifth Mackay, Murray, Beuchat, Sailor Morris left us using man power pull sledges. Sent again Herald Island three sledges, twenty dogs, pemmican, biscuit, oil. Open water prevented their landing. Saw no signs of men, presumed they gone Wrangel. Returning left provisions along trail. Shortly after their return east gale sent us west. February twenty-fourth I left camp. March twelfth landed Munro, Williamson, Malloch, McKinlay, Mamen, Hadley, Chafe, Templeman, Maurer, Breddy, Williams, Eskimo family Wrangel eighty-six days' supplies each man.

"March seventeenth Munro two men fourteen dogs left for supplies Shipwreck Camp. Plenty of driftwood game island. March eighteenth I left island Eskimo landed Siberia fifty miles west Cape North. May twenty-first Captain Pedersen whaler *Herman* called for me Emma Harbor going out of his way whaling to do so. Soundings meteorological observations dredging kept up continually. Successful. Twelve hundred fathoms animal life found bottom.

"Bartlett, Captain, C. G. S."

The Captain's plea for help on behalf of the men at Wrangel Island met sympathetic attention everywhere. Two countries were especially well placed for offering help in the work of rescue, the United States and Russia. The American Government gave orders to Captain Cochrane of the *Bear* (not the *Polar Bear*) to endeavor to rescue the *Karluk* crew, and similar orders were given by the Russian Government to the ice breakers *Taimyr* and *Vaigatch*. The stout old *Bear* is a good ice ship and with a creditable record of service from the time she and the *Thetis* rescued the Greely survivors from Cape Sabine. Since then she had rendered valuable assistance to many a whaler and trader when in difficulties with the ice. But the *Taimyr* and *Vaigatch* were more modern and powerful ships. Their commanders had just made the northeast passage around Asia, discovering Emperor Nicholas Second Land on the way. They were already familiar with the waters towards Wrangel Island and it appeared that they would have the best chance of making a rescue.

But ice conditions proved especially difficult. The Russian ice breakers had been in sight of Wrangel Island but had been unable to get within ten miles of the coast when suddenly the wireless brought them the news of war and orders to return for active duty. This left the *Bear* alone, so far as government vessels were concerned. Before attempting to reach Wrangel Island she had to go to Point Barrow. Here Captain Bartlett met McConnell and heard from him what had happened to us after our separation from the *Karluk* about eleven months before.

August 23rd the *Bear* started for Herald Island. She found ice conditions difficult, however, and when some fifteen miles from the island she was forced to turn back through fogs, thickness of the ice, and lack of coal. This was a hard experience for Captain Bartlett, although the miscarriage was probably felt as keenly by the captain and officers of the *Bear,* who were interested heart and soul in the rescue.

When the *Bear* got back to Nome August 30th public feeling was deeply stirred, for it was now realized that unless the men on Wrangel Island could look after themselves, which did not seem likely to most Alaskans, there might soon be a tragedy. With most Alaskans to think is to act and their generosity knows no stint. Of no one is this more true than of Jafet Lindeberg, the most romantic pioneer and the leading mining operator of western Alaska. He decided instantly that no matter how many other ships might be sent, one more vessel would increase the chance of rescue. With quiet directness he spent fifteen thousand dollars of his own money in two or three days to charter the famous old ship *Corwin,* the revenue cutter which sailed under Captain Hooper in 1881 in search of the De Long expedition and was the first ship to land on Wrangel Island. That voyage has in large part waited for its recognition until in 1917 John Muir's narrative of it was published under the title, "The Cruise of the Corwin." The ship was now quickly outfitted with a crew of experienced ice men, both white and Eskimos. They carried dogs and dog sledges and the Eskimo umiaks and were going to attempt bringing the men away even over miles of ice if the vessel failed to get near shore—a feat possible with umiaks and scarcely otherwise. They had provisions enough for a winter, if necessary, for themselves and the *Karluk* men.

McConnell was now in Nome and felt as Lindeberg did about the necessity of as many vessels as possible trying to reach Wrangel Island, for in the uncertainties of the ice even the weak may have the luck to succeed where the strong fail. McConnell now went to Mr. Swenson, the owner of the Seattle walrus and trading schooner, *King and Winge,* and asked him to attempt the rescue. Swenson generously consented at once and the three ships were soon under way, bound for Wrangel Island.

With good luck and the skillful management of Captain Jochimsen, the *King and Winge* won the race although Lindeberg's *Corwin* came in the next day. We will let McConnell tell the story of the voyage to the rescue:

"My first intimation of the *Karluk's* fate came at Point Barrow. After I had participated in the preliminary stages of the journey over the ice, Stefansson placed me in charge of the *North Star* camp at Clarence Bay, with instructions to turn over to Wilkins the ship and all the equipment, which he would take to Banks Island. Late in the summer I started 'outside' with a definite plan to rescue the *Karluk* survivors, wherever they might be, by airplane.

"Fortunately the *Bear,* with Captain Bartlett as a passenger, arrived at Point Barrow just about the time we arrived from Clarence Bay, and it was then for the first time that I learned that the *Karluk* had been crushed in the ice and that at least eight members of the party were missing. The *Bear* was then on her way to Wrangel Island, after having made one attempt at rescue, but it seemed to me that the chances of rescue would be twice as great if another should approach the island from an opposite direction. If the wind kept the ice fields tight against the island on one side, I reasoned, the opposite side should be comparatively clear of ice. Hastening down to Nome while the *Bear* was en route to the island I suggested by cable to the Canadian Government that it charter another ship to proceed independently of the *Bear* and approach Wrangel Island from a different angle. Whether the war prevented the Government from giving due consideration to this proposal or whether it felt that, having entrusted the rescue work to Captain Bartlett and the *Bear,* it could not entertain this proposal, I do not know. At any rate, my suggestion was turned down.

"It was now late in August. The *Karluk* had been frozen in two weeks earlier the year before, so it was evident that no time was to be lost if the survivors were to be rescued. To add further to our uneasiness at Nome, the *Bear* now returned from her second attempt at rescue, and reported that she had been blocked by ice twenty miles from the island. Without sleds, dogs, or umiaks she had been helpless.

"It now became apparent that the *Karluk* survivors were in a precarious situation. Equipped with an umiak, it would have been a comparatively simple matter for them to have landed on the Siberian mainland, but this essential piece of Arctic equipment had not been saved from the wreck. The freeze-up was likely to come at any moment, and make rescue impossible. The *Bear* was to make a third attempt as soon as she could replenish her fuel supply, but there was no certainty that it would be successful. There were three whaling ships in the Arctic, each one of which would have made an individual attempt at rescue had they not been sure that the *Bear* would reach the island. Now they were hundreds of miles to the northward. Jafet Lindeberg, as I learned later when he was the first to congratulate Swenson on his daring rescue, had chartered the *Corwin,* which was then being outfitted.

"But the *King and Winge* was in the Nome roadstead, ready to proceed anywhere at a moment's notice. She was a halibut schooner, but she was sheathed with Australian iron bark and equipped with excellent gasoline engines. Olaf Swenson, of Seattle, was primarily in the Arctic to trade with Siberian natives and hunt walrus, but he quickly abandoned these remunerative projects when I represented to him the extreme danger of my former comrades. Theretofore, be it said to his credit, he had hesitated about joining in the rescue because, like others, he had thought the *Bear* would be successful; he did not wish to deprive the *Bear* of any glory which she might earn. But now, I pointed out, the time for formalities was over; either the survivors must be rescued within ten days at the most or they surely would starve to death during the winter. Swenson's reply was a simple, 'All right; we'll go get 'em.' Within half an hour we were on our way to East Cape, Siberia. For he had asked me to go along. The *Bear* and the *Corwin* were left in the Nome roadstead.

"At the very outset, Swenson determined that he would not be handicapped by the lack of men, dogs, umiaks or any other essential Arctic equipment. Arriving at East Cape, therefore, he lost no time in securing an umiak, fifteen natives to haul it over the ice should the *King and Winge* be blocked as the *Bear* had been, and some dogs. The umiak, he knew, being light and covered with walrus hide, could be dragged over the ice by the natives, launched in the open water beyond, dragged over the next field, launched again, and the process continued for twenty or a hundred miles if necessary. Swenson, in this instance of foresight as in many other details of the rescue, deserves the greatest credit. He not only risked his ship and her valuable cargo of furs, but he risked his life and the lives of his men to carry out this humanitarian effort.

"In the six hundred-mile trip from Nome to Wrangel Island we saw no ice for the first four hundred miles. Then we began to see scattered floes, some of them containing walrus that would have yielded Swenson thousands of dollars had he stopped the ship to kill them. But he realized that delay might mean death to those helpless human beings he had come so far to find. The possibility of having one's ship crushed by the ice which we now encountered, or frozen in for the winter was not pleasant to contemplate. But so far as I know, the 'full speed ahead' order which he gave Captain Jochimsen on leaving

Nome was not changed until we struck ice so densely packed that the little schooner was forced to twist and turn, back up and go ahead, and even clamber up on a floe, like a polar bear struggling out of the water, and break it down with her sheer weight. Only by trying all the ice-breaking tactics known to the veteran Captain Jochimsen was the *King and Winge* able to proceed.

"The ice at this time was moving under the influence of a southwest wind, which made the situation rather dangerous, as we were in the center of the field, but by keeping the engines going every hour of the twenty-four, the staunch little schooner was forced through the eighty-mile field of ice and the island reached on the morning of September 7th. It was quite a feather in Olaf Swenson's cap, yet he gave most of the credit to Captain Jochimsen and the chief engineer. We had passed pressure ridges almost as high as the masts of the schooner; we had bumped and crashed and ground our way through densely packed fields, and now we could see the sandy beach of Rodgers Harbor, where Captain Bartlett had told us the survivors were to be found.

"As we came nearer, only one small tent, a flagpole and a cross were to be seen; there were no sleds or dogs. When no one appeared in response to repeated blasts of the whistle, we began to fear that the whole party had perished. Then one man emerged from the tent, brushing his hands across his eyes as if he could not believe his senses. Then he seemed to realize that here were real men in a real ship, and that his six-months' nightmare was over. Without even so much as waving his hand in welcome, he returned to the tent, brought out a British flag and raised it to half-mast. He was then joined by two others, neither of whom seemed to be half as excited as we were.

"A few of us, headed by Swenson, now went ashore in the umiak, where we learned that these unkempt and emaciated individuals were Munro, who had been left in charge by Captain Bartlett, Templeman and Maurer. Their shaggy, matted hair streamed down over their eyes in wild disorder; their grimy faces were streaked and furrowed with lines and wrinkles. Munro, it seemed, had lost at least thirty pounds in weight; their clothes, in which they had lived and slept for seven months or more, were begrimed and tattered. Their sunken eyes and emaciated cheeks told of suffering and want. I must add that, although I had known all of them well on the *Karluk* before we set out on the hunting trip, I was unable to recognize any one of the three.

"Malloch and Mamen, they told us, had died during the spring of nephritis. They pointed to the two graves and the cross. Nine other members of the expedition, they said, were to be found forty miles to the northeast, at Cape Waring. Of the entire ship's company of twenty-five, then, Captain Bartlett and Kataktovik had reached shore; Breddy, a sailor had died of a gunshot wound; Malloch and Mamen had died of nephritis; and Anderson, Barker, Beuchat, Brady, Murray, Mackay, Morris and King had become lost from the main party, never to be heard of again.

"Hadley, McKinlay, Kurraluk, Keruk (his wife) and their two children, Williamson, Chafe and Williams were found at Cape Waring. Had it not been for Hadley and Kurraluk, both skillful and indefatigable hunters, probably the whole party would have starved, as their rations had given out three months before. They had abandoned hope of rescue for that year; their flimsy tents were torn and full of holes, and their food supply, with the exception of a few fish, was practically exhausted. They had no way of knowing whether or not Captain Bartlett and his Eskimo had reached Siberia, but they did know that Wrangel Island sometimes is utterly inaccessible. Only three dogs of their original twenty were left, and but one sled of their original three. The rest had been lost, with their precious loads, in the water between Wrangel and Herald islands. They had matches, but their clothing was woefully inadequate. And only that morning they had planned to move to the other side of the island, and 'go into winter quarters,' as Hadley expressed it. But a snowstorm, which hampered the progress of the *King and Winge,* had delayed the move. For this we were in the end very grateful, for to search the island for the survivors would have been like looking for the proverbial needle.

"I had left a note at Rodgers Harbor for any boat which might come after us, and we had left the tent standing as a beacon. McKinlay now left another note tied to the tent pole, and I left still another on a pole at the edge of the ice. Which reminds me that all Jafet Lindeberg had to show for the fifteen thousand dollars he is said to have spent in outfitting the *Corwin* were these two notes of mine—and the consciousness of having done more than his duty in the circumstances. Each of us had feared for the safety of the *Karluk* survivors, but quite independently, as we had not seen each other in more than a year.

"Once on board each member of the party was furnished with the first bath and change of clothing he had had in more than seven months. Then came light and nourishing food, the relation of tales that would fill a volume, music on the phonograph, more food and coffee (and condensed milk, which they ate as if it were ice cream), and then repose on mattresses of dozens of reindeer skins. The next day, after the gallant *King and Winge* had won her way out of the ice, we met the *Bear* with Captain Bartlett aboard. Swenson was then headed for Nome with the rescued survivors, but now Captain Bartlett boarded the *King and Winge* and informed him that he would take his former charges aboard the *Bear,* which would take them to Nome. That, by the way, is why many people think the *Bear* rescued the *Karluk* survivors, because the dispatch that was sent out by the Associated Press merely mentioned that the '*Bear* had arrived at Nome with the rescued *Karluk* survivors aboard.' The *Bear,* a wonderful ship in the ice, and Captain Cochran, her master, deserve praise for their three attempts, but it is to Swenson and Captain Jochimsen, his sailing master, that the credit for the rescue belongs."

# THE REGION OF MAXIMUM INACCESSIBILITY IN THE ARCTIC *

BY VILHJALMUR STEFANSSON

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Most people imagine that the degree of inaccessibility of polar regions depends mainly on latitude. This is not true, nor is the problem so simple that it can be stated briefly. Neither are the facts sufficiently known as yet for a final and correct answer. But we do understand many of the conditions that modify the problem and an approximate statement of them is possible.

The main condition that determines the comparative accessibility of points within the polar regions is the configuration of the lands and their effect upon the ocean currents. The great oceans, the Atlantic and the Pacific, are similar in that each has its own warm current, but they differ fundamentally in this: that the Japan current of the Pacific is effectually shut out from the Arctic on that side by the chain of the Aleutian Islands, so that instead of flowing north into the Polar Sea to melt away the ice, it expends its heat chiefly along the coast of southern Alaska and the western coast of Canada and the United States, profoundly modifying the climate of those regions. But in the Atlantic the Gulf Stream flows unhindered northward through the wide and deep gap between Norway and Greenland, splitting on Iceland and giving it a climate approximately that of Scotland. We may truthfully think of the Gulf Stream as melting away the polar ice (which otherwise would come down to the northern coast of Iceland) with such effect that ships can sail ten or eleven degrees (or seven hundred miles) farther north on the Atlantic side than they can on the Pacific side of the Arctic.

## TWO STAGES OF APPROACH

Up to the present, polar exploration has been conducted in two stages. First, men sail towards the unexplored area as far as they can go in ships. From this point they travel with sledges hauled by dogs or men and in some cases by both.

In connection with this article I have prepared a map showing graphically, although with only approximate correctness, the comparative accessibility of various points within the arctic regions. The most northerly points known to have been attained by ships under sail or steam have been plotted on this map, and lines have been drawn connecting these points. It is possible that in certain places a ship could sail a little farther north; but no ship has as yet done so, and in general we may consider this the area "inaccessible to ships."

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* See map opposite p. 8, *ante*.

Beyond the farthest points yet attained by ships the exploration of the polar regions has been carried on mainly by men or dogs drawing sledges loaded with supplies upon which both men and dogs depended for subsistence. In some cases the length of the journey has been somewhat extended by the killing of the dogs originally used as draft animals and the conversion of their flesh to use as food either for the remaining dogs or for the men.

### THE "POLE OF COMPARATIVE INACCESSIBILITY"

It will be generally conceded that the best journey so far made by this method was that of Admiral Peary from Cape Columbia to the Pole. This is a linear distance of about 410 geographical miles. To show graphically some of the points that by this method have an inaccessibility comparable to that of the Pole itself, a distance of 410 miles has been allowed for along the meridians on which Nansen, De Long, Collinson, and others attained their farthest north by ship, either under steam or sail. These positions are marked on the map by dots enclosed in small circles. From the dots have been drawn arcs of circles of 410-mile radius. The intersecting arcs delimit the inner border of a zone of "comparative accessibility" considered from the point of view of a system of exploration similar to Peary's. The area enclosed by the intersecting arcs—stippled on the map—is the area of "comparative inaccessibility." Any point within it is less accessible than the North Pole. The average rate of Peary's travel was about 12 miles a day, so that in five days a distance of sixty miles was covered. Isochronic lines representing this distance have been drawn within the area of comparative inaccessibility. The center—determined by the intersection of arcs with centers at the ships' positions of Peary, Berry, and Nansen—is the "Pole of Inaccessibility." It is the point within the Arctic regions most difficult of access for any explorer who first goes as far as he can by ship and then pushes forward by the use of men and dogs hauling sledges.

When the time of exploration by airplanes or dirigibles shall come, this map will still express roughly the comparative inaccessibility of various points within the polar regions, for the presumption is that such flights would be made from bases established by ships under steam. Of course, it will eventually become possible to fly direct from any such city as New York or London to any point within the northern hemisphere, and for such undertakings this map will have no significance.

### FACTORS MODIFYING THE THEORETICAL RESULTS

Should anyone desire to use this map as the basis either for the planning of an actual polar expedition or for the illustration of theories upon the subject, he will have to bear in mind various modifying factors, the most important of which are the following.

1. When traveling over the surface of the mobile north-polar ice the first difficulty is with currents. For instance, it is possible to sail comparatively near the North Pole in the longitude of Spitsbergen; but Peary and most of his followers found that when they strove to march north in this region their efforts were in part cancelled by the continuous southward drift of the ice over which they were traveling. Our own work has shown that a similar southward drift, although perhaps not so strong a one, would have to be faced by anyone traveling north near the 138th meridian W. To the north of Grant Land Peary found an eastward drift though it did not handicap him materially. It is probable, on the other hand, that anyone starting north from Wrangel Island or the New Siberia Islands would get considerable help from a current running partly in his favor.

2. At times an even more serious handicap than an adverse current is the frequency of open leads. Judging from the narratives of polar explorers, this particular handicap is most serious in the region north of eastern Siberia, where Baron Wrangel traveled a century ago, and in the belt of generally similar conditions north of Alaska with which I have personal acquaintance. This handicap is of little weight northwest of Prince Patrick Island, as I have found by experience, and northwest of Cape Thomas Hubbard and north of Cape Columbia, as shown by the narratives of Peary and MacMillan.

3. In regions where currents are violent the ice is broken up with a resulting formation not only of the leads of open water which we have considered, but the heavy pressure ridges which make sledge travel more arduous and occasionally compel actual road making with pickaxes. The trouble with pressure ridges is generally greatest near land and becomes less and less as one goes farther from shore. They are the more troublesome the younger the ice. It seems now fairly clear that much of the polar ice is formed originally on the American and Siberian side of the Arctic and drifts across past the northern end of Greenland towards Franz Josef Land where it vanishes in the Gulf Stream.

This is one of the many reasons which made Peary's "American route to the Pole" the most desirable. Not only could he sail farther north by ship and then have comparatively few leads to contend with, but he had the added advantage of traveling in considerable part over ice which had been formed many years earlier, perhaps in the Beaufort Sea, and had been drifting towards Greenland and gradually thickening season by season until it was comparatively smooth and stable.

4. We have now considered the main points which must be kept in mind in interpreting the rather rigid data of the map. There remains a matter which was of little consequence to Wrangel, Nansen, or Peary. In their work they counted little upon replenishing their stock of food and fuel and thus making their journeys longer and easier through the killing of local animals, such as seals, polar bear, or fish. The presence of these, except near land, was either unsuspected or ignored; it formed no basis of their calculation and did not in practice affect their results materially. But in the system of "living off the country" * the animal life of the region is vitally important.

### THE QUESTION OF FOOD SUPPLY

From my study of north polar conditions I conclude that the amount of animal life has no direct relation to latitude. We have already seen that the North Pole by no means corresponds to the Pole of Inaccessibility which is distant from it by more than 400 miles. The North Pole lies, therefore, towards the edge of the area that is difficult of access through being covered with floating ice. It might seem more reasonable to suppose, then, that the amount of animal life would vary with distance from the Pole of Inaccessibility, but that does not seem to be the case either.

In the present discussion we shall ignore all forms of life except the seal, for this is the only animal upon which it appears practical to rely. We have seen whales and fish as far from land as we have seen seals, but in planning a journey over the ice I think it unlikely that I should ever trouble enough about animals other than the seal to carry equipment for securing them. It is probable that seals have no great difficulty anywhere within the polar area in securing food and that the most serious condition they have to fight is the massing of the ice in such a way that they cannot come up to breathe. In the summer it can be assumed that most of the seals are in open water; that is, they are either living in neighborhoods where there are scattered ice cakes like islands in a sea of water or else where there are open leads running like great rivers across the ice fields. In autumn the water of the leads will freeze over, at first with a thin ice that can be easily broken; but when this ice gets to be four inches or more in thickness the seal has to keep open a breathing hole by gnawing. Seals that live in comparatively level bay ice near land (and the same is doubtless true of seals living under level patches of ice on the ocean) have commonly several breathing holes, perhaps half a dozen or more, scattered over two or three acres of area. These holes are of necessity cigar-shaped, so as to admit the body of the

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* Vilhjalmur Stefansson: "Living Off the Country as a Method of Arctic Exploration," *Geogr. Rev.*, Vol. VII, 1919, pp. 291-310.

seal when the ice gets several feet thick. The actual breathing hole to the surface frequently is not more than an inch in diameter, and may be covered with snow. Presumably the seal, in looking up when swimming about in the water, can see light patches where his breathing holes are, and thus he is enabled to find them again after having descended to feed. He does not have to go deep to feed, for he lives mainly on the floating animal life near the surface rather than on fishes, although he gets a few of these also. He is stationary with reference to his breathing holes but continually moving with reference to the sea bottom and traveling in the same direction as the ice under which he lives.

It has been understood now for decades that a ship that freezes in the ice near Wrangel Island or the New Siberia Islands will arrive three or four years later in the ocean north of the Atlantic. Similarly, a seal that finds himself in the vicinity of Wrangel Island in the fall of a certain year will, in all probability, find himself two or three years later in the vicinity of Spitsbergen. Assuming that the ice that drifts across the Pole of Inaccessibility, or the North Pole for that matter, was originally formed in the Beaufort Sea where seals are known to be abundant, it will follow that a certain number of seals are continually being carried across either Pole.

### "ICE DESERTS"

But there are undoubtedly in the Arctic certain "ice deserts." These are regions of "Sargasso Sea" character. In them pressure due to winds or currents operating from a distance heaps the ice up, and it may even remain in an eddy for years. We found one such region north of Prince Patrick Island. Seals were not absent but they were comparatively rare, and they became more numerous again when we got farther north. On coming to such an ice desert the traveler who depends on some method similar to ours, where the main reliance for food and fuel is upon seals, will find that he is face to face with a problem similar to that of a traveler who, in crossing an unknown continent in tropical or temperate regions, finds himself gradually entering a desert produced by lack of rain. Such a traveler overland would have to depend upon his judgment. He might avoid the desert by skirting it; he might turn back, giving up his journey for the time being; or he might make a dash across, hoping that his resources would take him to the farther side of the hostile area. Just such a problem one would have to face in ice travel on coming to a region where an eddy existed and where massed ice had evidently persisted for years.

That is, it would be a problem to a party trying to live by forage. To a company using the pemmican-and-relay system it would constitute no problem at all. They would care about the smoothness, stability, freedom from leads of the ice, and under these heads they might find the conditions excellent—they probably would. For the presence or absence of seals beneath their feet they would care not at all.

But for those who count on getting their food and fuel as they go, these ice deserts are the one source of gravest concern. We cannot tell in advance for certain where we shall find them, for we can reason only on the basis of what we know and in the Arctic there are still many things unknown. When we come to the edge of such deserts we can guess only very roughly at their extent or in what direction the diameter will be least. They are, in the system of "living by forage," the most serious source of danger, although the mere understanding of their existence lessens the danger.

# THE WORK OF THE SOUTHERN SECTION OF THE EXPEDITION

[The following brief summary of the work of the southern subdivision of our expedition is condensed from the admirable "Report of the Southern Division of the Canadian Arctic Expedition of 1913," in the Report of the Department of the Naval Service for the Fiscal Year ending March 31, 1917, published at Ottawa in 1917, and is used here by the kind permission of the Department. This was written by Dr. Rudolph Martin Anderson, second in command of the expedition and in local charge of the southern section. Although the men of the scientific staff under him were by training competent and by nature diligent, Dr. Anderson deserves not only full credit for what he did as zoölogist but also in part for what the other scientists did in their various departments. The example, coöperation and sympathy of the commanding officer is reflected both in the volume and quality of the staff's scientific output.

[An attempt has been made to preserve in general Dr. Anderson's phraseology and marshaling of facts, but this is difficult in cutting the statement to a third of its original length. Much information of value, especially geological and topographic—descriptions of rock formations, altitudes of land forms, distances—has been omitted. The excuses are (1) that Dr. Anderson will probably publish eventually his own "popular" narrative; (2) the report which we have condensed is obtainable free by writing to the Department of Naval Service, Ottawa, Canada; (3) the same Department will publish in due course Dr. Anderson's full narrative of the Southern Section; and (4) the various specialists whose work Dr. Anderson summarizes will in their turn (and some have already) publish their detailed findings through the official Reports of the Canadian Arctic Expedition. Of these, sixteen volumes are in preparation or already published. It is hoped that eventually the full scientific report of the expedition will comprise several more volumes.*

[After summarizing the organization of the expedition and the progress of it, including the wintering of the *Alaska* at Collinson Point, Dr. Anderson continues his report as follows:]

John J. O'Neill started from Collinson Point with two assistants in February to begin geological work by a reconnaissance of Firth

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* These scientific reports can be secured by writing to the Deputy Minister, Department of Naval Service, Ottawa. Under certain conditions, libraries and institutions can secure these reports free.

River, which comes from the Endicott mountains near the international boundary and empties into the Arctic Ocean near Herschel Island. This was carried out successfully, as well as a geological reconnaissance of Herschel Island.

Kenneth Gordon Chipman and John Raffles Cox left Collinson Point on March 16 and proceeded to Demarcation Point. The coast line was mapped, tying in Herschel Island with the surveys of the Alaska-Yukon International Boundary Survey of 1912. Cox then joined O'Neill in completing the topographical work on Firth River, and the coast survey by sled to Escape Reef at the western edge of the Mackenzie delta, where a gasoline launch was in readiness to work in the delta as soon as the river broke out.

Chipman and O'Neill later in the spring did some geological work in the Black Mountain district west of the Mackenzie until the river broke out about June 1. They then proceeded by whale boat through the east branch of the Mackenzie, charting it as far as the south end of Richard Island. A launch which had been purchased for Chipman's survey could not be made to run, and not as much territory was covered as expected, but with an expert sailor of the delta as guide, the utmost advantage was got from the whale boat, and large portions of the middle and east branches were mapped, with a number of cut-off channels and smaller channels used in winter sled or summer whaleboat travel. At the same time Cox, with a launch that did work well and with competent Eskimo guides, surveyed the west or Aklavik branch of the delta from Akpaviatsiak or Escape Reef up to the mouth of Peel River.

There is a good 6-foot channel over the shoals around Tent Island, near the mouth of the west branch of the Mackenzie delta, and passing these there is a deeper channel as far south as the foot of the Grand Rapids of the Slave River, 60° North latitude, near the northern boundary of Alberta. The channel into the east branch of the Mackenzie delta is also deep enough for fair-sized schooners, and the new Hudson's Bay Company's post at Kittigaruit on the east side of the delta is supplied from Herschel Island by this route. The middle channel of the delta was not completely surveyed for lack of time.

Diamond Jenness, after coming ashore with Stefansson from the *Karluk* in September, 1913, had spent most of the winter in doing linguistic work among the Eskimos in the Point Barrow region. Towards spring he came east to Collinson Point and did ethnological and archæological work from Collinson Point to Demarcation Point in the spring, later in the summer carrying on some extensive archæological excavations at Barter Island, the ancient trading rendezvous between the Mackenzie Eskimos and the western Alaskan Eskimos. Frits Johansen made extensive collections of plants and insects, rearing many species of insects to study their life-histories and development. Some marine dredging was also done. During the fall and winter Chipman and Cox had prepared a map of the harbor at Collinson Point and vicinity on the scale of 1/24000 extending it inland to include some ten square miles of country with 20-foot contours. The harbor was thoroughly sounded. It is not suitable for large vessels, carrying only about seven feet of water at the entrance, but is deeper inside. Vessels of somewhat larger size may obtain shelter by going behind some of the small islands in the chain extending west from Flaxman Island.

During the spring and summer of 1914, the routine and executive work of the southern party devolved upon me, including the apportionment of supplies and equipment for three vessels. As a consequence, the time for zoölogical field work and the preparation of specimens was limited; nevertheless, 212 birds representing 52 species, and 77 mammals representing 13 species were collected and preserved. Nests and eggs of many of the species of breeding birds were also collected.

The expedition vessels *Alaska* and *Mary Sachs* left Collinson Point on July 25, 1914, the first day that the ice moved off the beach far enough to let us out of the harbor. They had been free of the ice inside of the harbor since July 7. After some delays occasioned by ice, which was thick and close to the beach around Martin Point, Icy Reef and Demarcation Point, the *Alaska* reached Herschel Island August 5, and the *Mary Sachs* a few hours later. The 10-ton gasoline schooner *North Star* had been purchased by Stefansson from its owner, Captain Martin Andreasen, who was wintering in Clarence Bay, a little east of Demarcation Point. She had got in to Herschel Island from Clarence Bay a little before.

These three were the first ships to come into Canadian waters in the western Arctic flying the Canadian flag.

The steam-whaler *Belvedere,* of Seattle, which had taken on a quantity of auxiliary supplies, coal, distillate, etc., from Nome in 1913 for the expedition, and had been compelled to winter in the ice a little offshore west of Icy Reef, had come through safely and landed our stores at Herschel Island about the last of July.

Herschel Island is a busy place in July and August. Perhaps twenty-five or more Eskimo whale boats, and a dozen two-masted Mackenzie-built schooners, were assembled here to trade with incoming ships. With the recent decline in the whaling industry in the western Arctic, and smaller probability of ships wintering at Herschel Island, the Eskimos from the Mackenzie delta and from the westward had a still greater incentive than formerly to be at the island to trade during the short open season.

As previously reported, Stefansson, after his separation from the *Karluk,* had established a base camp at Martin Point, with supplies obtained from Collinson Point, and from the *Belvedere* and *North Star* outfits, and started north from Martin Point on March 22, 1914, on an ice-exploring expedition over Beaufort Sea. The three men of the support party returned to land at Kamarkak, about 30 miles west of

Herschel Island on April 16, bringing the news that Stefansson and his two sailor companions, Storker Storkerson and Ole Andreasen, were going ahead fifteen days' more travel before attempting to return, with the possibility of trying to push across the ice to Banks Island in case conditions were favorable. As there were a much greater number of vessels and people than usual located at frequent intervals along the coast from Herschel Island west to Point Barrow that season, the party would have been soon heard from if they had returned to the mainland in the spring or summer.

The schooner *Mary Sachs,* under command of George H. Wilkins, with a full equipment of provisions, distillate, oil, etc., for two years or more, sledges, dogs, and a large gasoline launch, started from Herschel Island for Banks Island on August 11, and as we learned in the following spring, met Stefansson's party near Cape Kellett early in September, very soon after the vessel reached Banks Island. Of course no word of this could reach the outside world until over a year later, causing considerable anxiety. The three men of the ice party were generally supposed to have been lost.

The schooners *Alaska* and *North Star* sailed east from Herschel Island August 17, 1914. The *Alaska* anchored in Bernard Harbor, Dolphin and Union Strait, the evening of August 24, and the *North Star* August 25. We had smooth sailing on summer seas east of Baillie Island, free from ice except for a little loose bay-ice in Dolphin and Union Strait.

At Baillie Island we had met the little gasoline schooner *Teddy Bear,* going out under sail after spending five years in the Arctic. This vessel, which I had formerly met in Coronation Gulf in 1911, was the first pioneer trading vessel to come in east of Cape Parry. The *Teddy Bear* was commanded, engineered, and sailed by a young French-Canadian named Joseph F. Bernard,* a native of Tignish, Prince Edward Island. Of the five winters of this voyage he had spent one in a harbor on the south side of Dolphin and Union Strait, about sixteen miles south of Liston and Sutton Islands. This harbor in Dolphin and Union Strait, being the first good harbor for nearly 200 miles east of Pierce Point, was used as a base for two years, 1914-16, by the Southern section of the Canadian Arctic Expedition and named by us Bernard Harbor, partly in honor of Captain Bernard's pioneer energy in discovering its suitability and using it as a ship station and in recognition of his unusual kindness and rectitude as a pioneer of trade in an uncivilized and unexploited land.**

Bernard Harbor was chosen by us for its strategic advantages for working the coast both to the west (from Cape Parry) and to the east (into Coronation Gulf), as well as its nearness to Victoria Island (about 35 miles north across the strait). It was about as far east as driftwood could be found in reasonable amounts for fuel.

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* For various references to Captain J. F. Bernard, see index of "My Life With the Eskimo." Our Captain Peter Bernard was his uncle.

** This harbor was discovered but not sounded or otherwise examined, by Stefansson and Natkusiak in May, 1910.

After discharging the cargoes of the *Alaska* and *Star,* and replacing a broken propeller on the *Alaska,* I finally started west with the *Alaska* again on September 6, with the intention of getting some driftwood timber from farther west, as well as some more coal from our cache at Baillie Island. The members of the scientific staff, with Chipman in charge, were left at Bernard Harbor, to put up winter quarters, with some Eskimo assistants. Captain D. Sweeney, Mr. D. W. Blue, engineer; Mr. A. Castel, J. Sullivan, cook; Mike, the Eskimo assistant engineer, and Ikey Bolt, a Point Hope Eskimo sailor, went west with me on the *Alaska.* Finding weather conditions very favorable at Baillie Island, and no ice reported to the westward, it seemed well to go on to Herschel Island, to bring on additional coal and oil, and additional supplies which had been expected to arrive from the westward during the summer. The *Alaska* reached Herschel Island again September 11. The *Ruby* which was expected with supplies from the west, had not arrived, and after loading on the *Alaska* some stores from our reserve stock at Herschel Island, we started east again on the morning of September 13.

The *Alaska* got back to Baillie Island on the night of September 15, in the midst of a northwest gale, with frequent snow-squalls, and spray freezing on the decks and rigging. The storm kept rising for the next two days, the worst storm of the season, and did not abate until noon of September 19. There was a very high storm tide, rising about 4 or 5 feet at Baillie Island, the waters of Liverpool Bay seeming to have been piled up by the northwest gale and forced out between the Baillie Islands and the mainland.

Quantities of large ice had come in from the northwest during the big storm, but we tried to go out on the morning of September 20. In trying to turn around in our narrow anchorage, the bow of the *Alaska* ran slightly in the mud. We tried to kedge her off, but with the falling of the westerly wind, the storm tide fell rapidly,* and we were soon settled hard aground. The whole cargo had to be discharged and the schooner finally floated free again on the evening of September 24. As the nights were getting very dark at this season of the year with the moon gone, and considerable heavy ice was coming in from the northward, with young ice forming thick and slushy at times, it was a precarious matter to sail at night with a small vessel. In the summer time, with daylight all night, a vessel can tie up to the ice, but it is a different matter in the autumn when the ice is moving in the dark. It seemed doubtful that we could get east of Cape Parry, or possibly Pierce Point, and there are no harbors beyond that nearer than Bernard Harbor. As we did not have much to bring back to Bernard Harbor, and nothing that was absolutely necessary, the advantage in getting back there with the *Alaska* did not seem commensurate with the risk involved to the vessel, so I decided to put the boat into winter quarters at the Baillie Islands.

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* Cf. the grounding under similar conditions of the *Polar Bear* in 1917, *ante* p. 672. [Notes by V. Stefansson.]

On November 20, 1914, I started from the *Alaska* at Cape Bathurst for the winter base of the Southern party on Dolphin and Union Strait, an approximate distance of about 400 miles,* accompanied by Castel, Sullivan and the Eskimo, Ikey Bolt, taking one Nome sled and seven dogs. We followed the west side of Franklin Bay 90 miles to Langton Bay and crossed the Parry peninsula to Darnley Bay where we passed the house of Captain Christian Klengenberg,** an ex-whaler with his family, and another house belonging to an Eskimo family. Klengenberg's young son and daughter had a temporary trapping camp a little east of Cape Lyon, and east of that there were no inhabitants west of Dolphin and Union Strait. East of Baillie Island there are no permanent residents, and the western Eskimos make only casual excursions into the territory.

The *Star* had made a cache of provisions and coal oil at Pierce Point in the fall, and we took some supplies from it on this trip. We found enough driftwood for fuel at every campsite along the coast. On December 10, behind Keat's Point, we met Chipman and O'Neill with a sled. They had left Bernard Harbor November 19, to make a preliminary topographical and geological reconnaissance as far west as Pierce Point, in preparation for the coming spring's work, as well as to look for the whereabouts of the *Alaska*. They turned around and accompanied us eastward. We found open water near shore all along from Cape Lyon to Clifton Point. At Deas Thompson Point the ice had recently broken away from the cliffs and we had to make a detour over the hills. We reached the winter quarters of the main party about noon, December 25. The temperature in general was warmer than usual at that season, not going below zero Fahrenheit at any time of observation during the first two weeks of December, 1914, and on occasion rising to 25° above zero Fahrenheit. The freeze-up in 1914 occurred at Cape Bathurst about September 30, and at Bernard Harbor about October 16.

Everything was in good shape at Bernard Harbor. A frame house had been built, covered partially with boards and partially with canvas, and the whole sodded over. Enough small driftwood had been picked up in autumn to last for fuel until Christmas, and more was hauled later in the winter, and pieced out by a sparing use of coal. East of Cape Bexley there is very little large driftwood on the beaches.

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* For an account of the first sledge journey ever made by white men along the coast from Franklin Bay to Coronation Gulf, see "My Life With the Eskimo," pp. 159 ff.

** See references to Captain Klinkenberg in index of "My Life With the Eskimo." [Notes by V. Stefansson.]

About thirty seals had been killed at Bernard Harbor in the autumn, but only four caribou. The Eskimos on the Victoria Island side north and east of Bernard Harbor killed large numbers of the caribou in the autumn, and we were able to purchase all the frozen caribou meat we needed as soon as they could haul it across, and later, after the Eskimos' winter sealing by spearing through the ice had commenced, we were able to buy all the fresh seal meat we needed for dog-food or table use.

During February and March, 1915, Castel and myself made a toboggan trip from Bernard Harbor across the west end of Coronation Gulf, up the Coppermine River, to Dismal Lake, and across to the Dease River, northeast of Great Bear Lake. We were much delayed by soft snow amongst rough, jagged ice on the Coppermine, and our dogs were too exhausted to be able to proceed very far through the deep, soft snow on Dease River, so we had to turn back to the coast without making connections with any white man or Indians on Great Bear Lake to take out our winter's mail. We reached Bernard Harbor again April 1, and a little later the mail was sent out along the coast to the *Alaska* at Baillie Island.*

On the Coppermine River, around Dismal Lake, on the Horton River (south of Franklin Bay), and to a less extent farther west, we have often noted the large proportion of dead spruce trees near the northern limit of timber. In some areas about 90 per cent. of the trees are dead, in districts which show little or no evidence of forest fires. Johansen and Jenness accompanied our inland trip as far as the edge of the timber-line on the Coppermine, near the Sandstone Rapid. Johansen made a careful study of forest conditions here and found that practically all the dead trees which were examined had apparently been killed by bark-beetles, three species of them being found.

The program for the spring's work had been planned before going inland. Cox, with an assistant, started in March and made a careful survey of the coast along the south side of Dolphin and Union Strait from Chantry Island east to Cape Krusenstern and as far south as Lockyer Point. Starting again in April, he carried the survey around the west end of Coronation Gulf as far as the mouth of Rae River. Rae River was ascended and carefully surveyed for about 70 miles, until it forked into two small creeks. Large willows were found at rather frequent intervals on Rae River after getting some way from the boats, but no spruce or other timber. After reaching the head of Rae River, Cox's party crossed overland to the south side of Stapylton Bay. They had no difficulty in killing a caribou whenever they needed meat. Cox reached Bernard Harbor May 25.

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* Cf. the account of a journey made in 1911 through the same country in "My Life With the Eskimo," pp. 237 ff. It was made easily and rapidly then because the sledges were light and we lived by hunting. Dr. Anderson's difficulty in 1915 was that his sledges were heavily loaded with food. They sank into the snow in consequence, progress was retarded and the dogs and men worn out by heavy work pulling the loaded sled. [Note by V. Stefansson.]

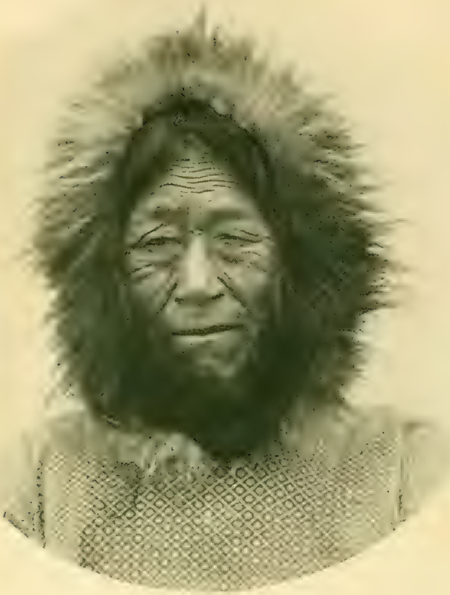
Chipman and O'Neill started on the western survey from Bernard Harbor on March 17, 1915, going direct to the west end of Darnley Bay and working east. Connecting with the previous surveys of the Parry peninsula, the survey was carried east during April, the season being much further advanced than it was farther east during the same period.

The southern part of Darnley Bay had never been surveyed before and only imperfectly explored. Two fairly large rivers flow into the south and southeast sides of the bay. Inland on the east side of Darnley Bay beach gravels and terraces above 500 feet were found. From Darnley Bay until east of Deas Thompson Point there are a number of high points which have received the name of mountains, but no definite system or range is apparent. The highest of these points (Mount Davy) is between the Croker and Inman Rivers. The coast has a well-defined shore-line of rock or boulders and gravel. None of the rivers flowing to the coast east of Darnley Bay extend any great distance inland. Both valleys and beds indicate a very heavy run-off in a short time.

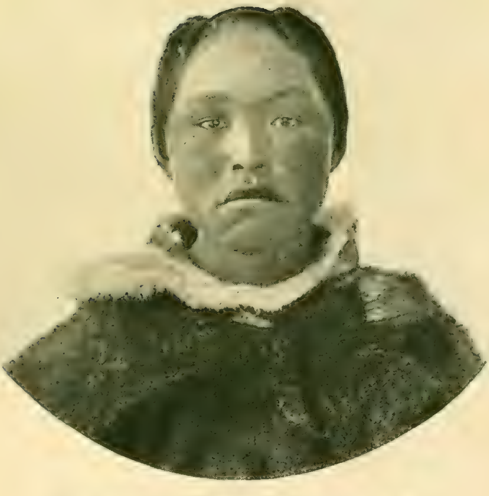
The coast-line as traversed from Cape Lyon eastward was found to be somewhat more straight than the former charts give it, but this is apparently due to the practical impossibility of sketching a coast-line accurately on a hurried boat-passage some distance offshore, with infrequent landings. This method has given the result that many of the so-called points on this coast are not salient projections of the coast-line. More often the charted points and capes are high land or rock cliffs with low land on either side. This gives the higher places the appearance of points or capes when viewed from a distance. Our method of locating control points at frequent intervals by latitude, longitude and azimuth observations, traversing between these points by frequent compass sights and pacing all the intervening shore-line, will undoubtedly give a more accurate map. No serious rectification was necessary however until Stapylton Bay and eastward. Numerous fossil shells are found along the old beach terraces. West of Chantry Island fossils were collected from the 15-foot and 30-foot horizons. These fossils may be duplicated on the present strand-line. Near the mouth of Inman River, fossil shells were found in numbers up to 170 feet above sea-level.

In an examination of the rocks from the foot of Darnley Bay to Cape Krusenstern, no evidence of the existence of copper was seen.

After returning from the inland trip up the Coppermine, I started west from Bernard Harbor April 21 to reinforce the western survey party, meeting Chipman and O'Neill coming east near Deas Thompson



Old Point Barrow Woman.



Half-grown Boy—Copper Eskimos.

Eskimo Men and Women Seem to Enjoy Mending Clothes and Implements.

Point. The Eskimos, Ikey and Palaiyak, who were with the party, were sent on to Baillie Island with the mail, and to help on the *Alaska,* while I returned eastward with the survey party. Instructions were forwarded to Captain Daniel Sweeney of the *Alaska* at Baillie Island, and he carried out the summer's work of the vessel very creditably and carefully, bringing in the mail and a good load of additional provisions and coal from Herschel Island, arriving at Bernard Harbor September 5, 1915. The small schooner *El Sueno* which had been engaged by Stefansson at Herschel Island to bring in additional supplies, arrived September 7, and at once went west again to winter at Pierce Point, for the purpose of trapping. The *Atkon,* a schooner belonging to the Church of England Mission, was blown up on the shore between Clifton Point and the mouth of Croker River, but the vessel was apparently uninjured, and the missionaries established a winter camp there.

Our western survey party reached the station at Bernard Harbor on May 24, 1915, one week ahead of schedule. The unusually mild weather during the month of May facilitated our work very much. The skies were usually clear, and conditions good for traveling and taking observations. The weather was very warm and the snow thawing fast around Croker River May 16, but east of that point the season was more backward. The snowfall is not very deep in this region, however, and after the snow really starts melting, it disappears from the land within a very few days, except the remains of deep snowdrifts in gullies and on the shady side of hills.

On May 21, 1915, Wilkins arrived at Bernard Harbor, accompanied by Crawford, discharged as engineer of the Northern party's schooner *Sachs,* and Natkusiak. They had come from the winter quarters of the *Sachs* near Cape Kellett, Banks Island, making the trip in about twenty-five days, by way of Victoria Island. Wilkins had come to make arrangements to take the *Star* to Banks Island or Prince Patrick Island as an auxiliary for proposed more extended work of the Northern party. Our plans for the Southern party had been based on the certainty of having the *Star* for the summer's work in Coronation Gulf, as the *Alaska* was at Baillie Island, and bound to go to Herschel Island before coming in again. It was finally arranged that the *Star* should lay down some provision depots in Coronation Gulf and take the gasoline launch and outfit as far east as Cape Barrow, before going to Banks Island.

On the ice of Coronation Gulf Wilkins this spring secured studies of Eskimo life in camps on the ice, and later in the season, views of their summer camps, fishing scenes, home life and habits. About 2,000 feet of film was exposed, most of which was ultimately developed and found to be good. He also made a very good series of portrait studies of most of the local Eskimos (Dolphin and Union Strait) men, women and children, in full view and in profile, for Jenness's ethnological work. He also made good photographs of growing plants, insects, etc., for the botanist and entomologist, and many photographs of birds, mammals, etc., in their natural habitat; pictures of great scientific as well as artistic value.

The western survey parties having finished their work late in May, it became necessary to start early summer work at once to the eastward. The Northern party had made good use of waterproof tarpaulins in constructing sled-rafts to cross leads, being unable to haul canoes over rough ice, but of course this made no provision for travel after the break-up of the ice. Our problems were somewhat different, as in Coronation Gulf the ice was comparatively smooth. We took a large umiak, about 28 feet in length and 6 feet beam, covered with heavy bearded-seal skins, and strengthened the stern timbers to provide for the adjustment of an Evinrude detachable gasoline motor, which proved to be a valuable auxiliary. The canoe could be lifted by two men and placed on a low, ivory-shod boat-sled, which could be hauled in the spring by four or five dogs, carrying several hundred pounds of baggage inside the boat. If necessary to cross a lead, the umiak could be unshipped and launched in a few minutes, and if the ice should break, the canoe would be launched automatically, already loaded. Later in the season, the umiak proved its worth by carrying two or three men, three dogs, and a thousand pounds or more of provisions, gasoline, and camp gear, making 5 to 6 miles per hour, and weathering some pretty heavy seas. It could be beached on any kind of coast in a hurry, by rolling it up on inflated sealskin "pokes," a great advantage when exploring a coast whose harbors are unknown, and a sudden breeze speedily raises a dangerous lop, as it does in Coronation Gulf. The umiak is also a very useful boat among ice floes, as it is practically unstovable and can be easily and quickly hauled upon or over an ice cake, and it will also stand bumping over the boulders on a river-bottom which might prove disastrous to a wooden boat. The weight of a wooden boat of sufficient size would also be an insuperable obstacle to transportation by sled. For inland work in the Coronation Gulf region, recourse must be had to "packing" in the summer, as most of the streams are too small and rapid to be navigable for any distance.

June 9, 1915, Cox and O'Neill started eastward from Bernard Harbor with the umiak on a boat-sled, taking also another large sled-load of supplies. They had as assistant for the early summer Natkusiak, who had been with me in the region several years before, and also as an experiment, a family of Coppermine Eskimos. We had heretofore little success in getting useful service from the local aborigines, who have little or no idea of working for any one. It seemed necessary, however, to engage somebody to look after the sledge dogs, or part of them, after the surveying party should have to take to boat work, and this native was engaged to help in the spring and look after our dogs during the summer at a fishing-place on one of the rivers on the south side of Coronation Gulf. Mupfa turned out to be a capable, intelligent man, willing to learn, carried out his agreement for the summer very creditably, and rendered loyal service to the expedition for the remainder of the year. The party was to proceed by sled to Tree River, or the Annielik (in Gray's Bay); during the early summer to work geologically up some of the rivers in that region, moving gradually along the coast to Cape Barrow, the western extremity of Bathurst inlet, where Chipman and I would meet them with the *Star* about the first of August, bringing the gasoline launch and additional supplies.

During the early summer of 1915, Chipman began a stadimeter survey of the region about Bernard Harbor, with 20-foot contours. Johansen did some dredging for marine life in the inner and outer harbors, and completed his collections of the plants and insects of the region, while my own collections of birds and mammals was considerably increased. Quantities of salmon trout were sun dried for winter dog-food, and some caribou meat for our own consumption. The few families of Eskimos who remained about during the early summer dried large numbers of lake trout, catching them with hooks through the ice in June and early in July, and spearing and gaffing large numbers of salmon trout which were impounded in stone weirs when they started to run up the streams in July. By the last of July all the local Eskimos had departed on their summer packing expeditions to look for caribou inland.

The summer of 1915 was late and cold, and the ice melted slowly, but by July 20 all of it was out of the harbor. Bay ice disappears with wonderful rapidity at that season, the hot sunshine cutting away the top almost visibly. After the harbor and the large bay south of Chantry Island were free, Dolphin and Union Strait was still pretty full. Broad leads opened up outside for a little, but the ice seemed pretty solid to the eastward. A steady, strong northwest wind for a week kept driving the floes down into and blocking up the Strait.

After being held for nearly two weeks after the break-up by heavy ice packed into Dolphin and Union Strait by continued westerly winds, a spell of easterly wind started the ice moving westward again, and we worked the *Star* out through east of Chantry Island August 9, finding the ice slowly moving westward. In due course we reached Port Epworth, the splendid harbor at the mouth of Tree River. We found O'Neill and Cox camped in a little bay just east of Cape Barrow.

The *Star* put down a large cache of provisions and gasoline at Port Epworth, and another at Cape Barrow for use during the summer of 1915 and the possibility of sledge work in the spring of 1916. She then started westward, having been delayed only three days after getting out of the harbor in making the eastern trip. With a stiff breeze behind her, she was back at Bernard Harbor within twenty-four hours, and finding all the ice had moved to the westward, kept on going and soon reached Baillie Island. The party who went west on her were Wilkins, commanding; Castel, Crawford (discharged at Baillie Island to go out on schooner *Ruby*); and Natkusiak. The party remaining at Cape Barrow consisted of four men, Chipman, Cox, O'Neill and myself, with one 20-foot wooden gasoline launch with 7-horsepower Gray motor, and the skin umiak with Evinrude motor.

Cox and O'Neill, with their Eskimo assistants, had left Bernard Harbor June 9, hauling the skin umiak on a boat-sled, and crossed Coronation Gulf direct from Cape Krusenstern to the mouth of the Tree River (Port Epworth). The season was much further advanced around Tree River than it was at Bernard Harbor and the ice was soon cut away around the mouth of the river. Large quantities of fish were caught after the opening of the bay, and in addition to what were used by the party and their large bunch of dogs, over 500 pounds were dried, baled and put *en cache* on the island at the mouth of the harbor for autumn use. Wolverines are surprisingly abundant on the coast in this region, and unless provisions and stores are cached on islands they are apt to suffer from their ravages. [Polar bears are rare or absent.]

Tree River was explored for some distance inland on a packing expedition in July. Like all the other streams in this region (in the granite area) it has rapids, cascades, and falls a few miles from its mouth. It abounds in fish and several families of Eskimos usually spend the summer at the first cascade, catching fish by spear, hook, and raking with a sort of double gaff-hook. Salmon trout and two species of white-fish are largely caught in the rivers, while big lake trout are found in nearly every lake of any size. The country a little back from the mouth of Tree River is dotted with innumerable clear lakes, basins in the granite, and the vegetation, particularly in flowering plants, is richer than the average. A good collection of plants was made.

Tree River has two large branches, one of them said to rise near the Coppermine. This western branch of Tree River is said to have spruce trees near its source. The scenery around Port Epworth is striking, vertical cliffs of dark-colored diabase, with long talus slopes, rising to a height of 600 feet above sea-level on either side of the harbor. About five miles south of the mouth of Tree River a ridge of rounded granite mountains runs to the south and east side of the river, the highest peak visible, about ten miles back from the entrance of the harbor, being 1,090 feet above sea-level. About half a mile east of the mouth of Tree River, there are small crevices or pockets in the granite which are filled with the soft potstone (a talc chlorite schist), much used by the Eskimos of this region for making the blubber-lamps which are universally used by them, and also for making stone cooking pots. The use of the cumbersome, heavy and fragile stone pots, however, is rapidly declining, owing to the much greater convenience of tin, iron, and copper-ware which are being introduced in trade. There is no known potstone quarry west of Tree River, and most of the stone utensils come from there although the Eskimos informed us that there are also some smaller stone deposits on the Utkusikaluk, flowing into Gray Bay, and somewhere around Cape Barrow.

Cape Barrow, or Haninek, as it is called by the Eskimos, is a mountainous granitic region, but is not nearly so high as stated by Franklin.* He says: "The higher parts attain an elevation of 1,400 and 1,500 feet and the whole is entirely destitute of vegetation." In 1915 we found the height of the highest of the granite ridges to be 340 feet above sea-level. Although the hills have a barren appearance, careful inspection shows many bright green patches in little valleys and gullies where soil has collected, as well as in basins in the rocks, around the little lakes—green grass, low dwarf willow, deep tundra moss, cotton-grass or "nigger-head" tussocks and heather growing luxuriantly in many shelving rocks. There were about ten species of flowering plants in bloom close to our camp August 13. The summits of the granite ridges were usually covered with gray lichens. In this region we were often deceived by great reddish areas on cliffs, giving the appearance of a ferruginous rock, but upon closer examination proving to be only a dense coat of red lichens.

After the return of the *Star* to the westward, Chipman, Cox, O'Neill and myself continued the survey east from Cape Barrow. We were prevented from getting back to the station before the freeze-up, as the almost continuous heavy weather late in the autumn prevented us from traveling a large part of the time with our small boats.

We found our first native copper *in situ* in cracks in the diabase on an island in Moore Bay. Small veins of galena (lead sulphide) were observed in cracks in the granite at Galena Point, just east of Detention Harbor.

From Kater Point, O'Neill, Cox and I continued to carry on the survey with the launch down the west side of Arctic Sound. Some difficulty was experienced in finding a channel into the mouth of Hood River through a number of low sandy islands at the mouth, on account of a heavy sea running at the time. After entering the river we found a channel 9 or 10 feet deep. Willows on the bank here were 5 or 6 feet high, one inch or more in diameter, affording more fuel than was usual in this region. We could take the launch up only to the first cascade of the Hood River, and camped there on August 27, making an inland reconnaissance in the direction of the James River. The steep clay banks of the river are about 100 feet high at the first cascade, with a level grassy bench extending back about half a mile to a ridge of fine, red sandstone with a broad grassy valley beyond. The next ridge was quartzite, succeeded by another grassy valley. A herd of thirty-four caribou was found here, and one fat young bull killed to replenish our meat supply. A lone bull had been seen and killed at Kater Point a few days before. Going out of the river again the coast of Arctic Sound was followed to its bottom. A fine large specimen of the Barren Ground bear was killed at the south end of Baillie's cove, the extreme bottom of Arctic Sound, where he was found digging roots from the sandy soil near the mouth of a small creek.

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* "Narrative of a Journey to the Shores of the Polar Sea, in the years 1819, 20, 21, and 22." By John Franklin, Captain R. N., F. R. S., and Commander of the Expedition. London, John Murray, Albemarle Street. MDCCCXXIII.

Native copper was found in amygdules on both sides of Banks Peninsula. Having struck a considerable copper-bearing district in Bathurst Inlet, it was thought better to make a detailed geological sheet of this important area than to attempt to make a complete survey of the bottom of Bathurst Inlet outside of the copper area. Driftwood was very scarce east of Kater Point, but by picking up every small piece we saw on the beaches, we usually managed to carry enough in the boats to last us a day or two. Bird and animal life was remarkably scarce along the coast. Caribou signs were seen occasionally, and fresh tracks on some of the islands. A very fine large bull caribou was killed on Kannayok Island, Bathurst Inlet, by Cox on September 3. Numbers of gulls were nesting in rookeries near Point Wollaston and on the south side of the Barry Islands.

"Barry Island" (cf. Franklin) instead of being a single island is really a group of large islands. The region around Point Everitt is known as Umingmuktok, and is the center of a fairly large group of Eskimos called Umingmuktogmiut. The Eskimos who frequent the southern and western parts of Bathurst Inlet are mostly Kilusiktogmiut, and this region in general is known as Kilusiktok.

As the season was getting advanced, we felt impelled to turn back from Ekallialuk (Barry Island) on September 8, 1915, without going to the bottom of Bathurst Inlet. The geological results had been encouraging, for two large areas, each of several square miles in extent, were discovered, in which the native copper is widely distributed, and much valuable geological knowledge had been gained in tracing the contact of the basalts with the granites and sedimentaries throughout the region. The plan was made to complete the detailed mapping of the copper-bearing area by sledge the following spring by one party, while another party should fill in the gaps remaining in the coast survey west of Bathurst Inlet. We [traveled part of the distance by boat and part by sled after the freeze-up and] reached the station November 9, 1915, and on that date received the first mail and news from the outside world that we had received for fifteen months.

Jenness, our ethnologist, arrived at Bernard Harbor on November 8, 1915. He had started out with a small band of Eskimos. These Eskimos fulfilled all their promises and obligations to Jenness in a very kindly and creditable manner. They spent most of the summer in the Colville hills in southern Victoria Island, and did not go to Prince Albert Sound, as had been anticipated. A few Prince Albert Sound Eskimos came to visit them in the spring, however. The party were moving most of the time, following the caribou, and supplementing the caribou to some extent with fish caught in the lakes. They did not suffer from lack of food, but experienced considerable discomfort from being without fuel for either cooking or warming themselves for a good part of the time. Jenness had some very interesting experiences, and obtained a good understanding of the language, habits, folk-lore, and viewpoints on life in general, such as can only be obtained by continued intimate relations. During the winter he supplemented this with intensive studies of the winter snow-house life, and many gramophone records of songs, shamanistic performances, and the like. Finger-prints of many of the people and many of their string-games, or cats'-cradles were recorded.

The *Alaska* had arrived at Bernard Harbor on September 5, 1915, after going from Baillie Island to Herschel Island for the mail and supplies. After discharging cargo, the *Alaska* went back west to Stapylton Bay to look for driftwood, as the amount of coal brought in was small.

Johansen had been in charge of the Bernard Harbor station since the *Star* left on August 9, with only the cook and Patsy Klengenberg, interpreter, to help him. He had been authorized to do some dredging with the *Alaska* after her return, so he accompanied her on the trip to Stapylton Bay. He got some valuable soundings and dredgings in Dolphin and Union Strait, down to a depth of 50 fathoms, and obtained a quantity of specimens from greater depths than he had been able to reach before. Johansen made continued studies of the fresh-water life of the ponds and lakes in the vicinity of the station, and made fairly complete collections of the flora and insect life. Johansen also did some other hydrographic work in the harbor and in the neighboring fresh-water lakes.

The caribou began to migrate across Dolphin and Union Strait shortly after our return from the east, and were coming in fairly large numbers by November 15, 1915. About forty were taken before the end of the month (including about ten brought by Jenness from the south side of Victoria Island), so a plentiful supply of fresh meat was on hand all winter. Salmon trout were also taken in some numbers up to the middle of December in nets set under the ice of the lakes near the station.

Captain Sweeney brought in the news that Daniel Wallace Blue, chief engineer of the *Alaska,* died at the Baillie Islands, on May 2, 1915, after an illness of ten days. There was no other illness among the members of the Southern party during the year 1915, except a slight illness of Jenness while he was spending the summer with the Eskimos on Victoria Island.

Tidal observations were taken at Bernard Harbor for a time in the spring of 1915. The maximum rise of tide recorded was about 2½ feet.

Only three or four families of Eskimos were around Bernard Harbor in the late summer and early autumn of 1915, but about the middle of November they began to come up from the Coppermine River region, and from the south coast of Victoria Island, until about 125 were living in a snow-house village on the beach near the station. Most of them stayed around for about three weeks, living principally on caribou meat, while their women were engaged in making new caribou-skin garments for the winter. All this work had to be done on land, as the natives of this region have taboos which forbid them dressing caribou-skins or making new caribou-skin garments while living on the ice. This was a happy part of the year for them, and there was singing and dancing most of the time. In the early part of December, when their new winter clothing was completed, and their stocks of frozen meat, dried meat, and fish began to run low, they all moved out to the vicinity of Liston and Sutton Islands, in the middle of Dolphin and Union Strait, about 16 miles north of Bernard Harbor. The people build snow-houses on the ice there, and live practically exclusively on seals for the rest of the winter.

A good collection of mammals and birds was made around Bernard Harbor this year and Jenness brought back a few zoölogical specimens from Victoria Island.

January and February, 1916, were spent by the geological and topographical men mostly in working up their field notes and preparing for the spring work. Jenness spent most of the winter at the large Eskimo sealing village near the Okallit (Liston and Sutton) Islands, pursuing his ethnological studies. I made a trip to the first timber on the Coppermine River with some of the hunters in January and February, and a quantity of caribou meat was brought back to replenish the house supply, as well as a few zoölogical specimens. Caribou were found to be fairly plentiful down to the coast near the mouth of the Coppermine River, and we also saw one small herd south of Cape Lambert. Caribou are not often seen near the coast of Dolphin and Union Strait in winter. The natives in this region spend the winter sealing through the ice, and at the present time do not molest the caribou from November until April.

I returned to Bernard Harbor from the Coppermine River trip on February 27, having been gone a little over a month. It had been arranged that Chipman should start on March 1 to make a survey of Croker River before starting the eastern work. This seems to be the largest river between Darnley Bay and Coronation Gulf, and nothing but its mouth had been put on the charts previously. I decided that I would accompany Chipman on this trip, which was of interest not only as giving an important geological section into the heart of the country, but might also throw more light on animal distribution, particularly of the ovibos. Owing to stormy weather we did not get away from Bernard Harbor until March 6, and reached the mouth of Croker River on March 15. Near Clifton Point we spent a night at "Camp Necessity," a little cabin built in the fall of 1915, by Rev. H. Girling, of the Anglican Mission service, and his assistants, Mr. G. E. Merritt, of St. John, N. B., and Mr. W. H. B. Hoare, of Ottawa. They had intended to come farther east, but had been cast up with their little schooner nearly a hundred miles west of the Eskimos they were intending to work among. Their schooner was apparently uninjured, and they expected to move in to Dolphin and Union Strait in the summer of 1916, and establish a mission at Bernard Harbor. The present western range of the Copper Eskimos extends usually to Cape Bexley or South Bay; west of that point is a 200-mile stretch of coast to Cape Lyon permanently uninhabited, and usually uninhabited west to Cape Bathurst, about 400 miles.

[We explored Croker River about 40 miles inland and found it to flow through rocky, comparatively barren country. No noteworthy mineral outcrops were found, game was scarce, and no signs of ovibos were found.]

We returned to the coast March 24, and reached Bernard Harbor April 2. The coldest weather of the winter was recorded while we were in camp up the Croker River, 46 degrees below zero Fahrenheit at 6 A. M., March 21. The thermometer rose to 9 degrees below zero at 4:30 the same day. The minimum temperature at Bernard Harbor the same day was 38 below zero, and the maximum 23 below zero.

A number of the eastern Eskimos came to Bernard Harbor late in March and many interesting gramophone records of the language and dialects were obtained. Earlier in the winter some Eskimos came from a greater distance to visit the station, notably a man named Kakshavik or Kakshavinna, calling himself a Pallirmiut, from the northwestern side of Hudson Bay. He claimed to have come from a timbered country far to the eastward, and had traded at a white man's post, from his description apparently in the region of Baker Lake or the Kazan River.

Johansen, with Ovayuak (Eskimo) for companion, made a trip along the south shore of Victoria Island, leaving the station March 6, and returning April 11, 1916. They crossed by way of the Liston and Sutton Islands, Lady Franklin Point, visited the Miles Islands, and went along the Richardson Islands as far as Murray Point on the south shore of Victoria Island. No Eskimos were seen except one group camped on the ice near Cape Murray. He made such botanical collections as were possible at that season, took a few zoölogical specimens, and a number of specimens of rock at various points along the south shore of Victoria Island. A few caribou were seen on southern Victoria Island on March 19 and 21. The most important results of his trip were a number of species of fossil corals collected on one corner of Liston Island in Dolphin and Union Strait, as recognizable fossils are very hard to find in that whole region. After his return Johansen spent the rest of the season in completing his biological investigations near Bernard Harbor, and in packing specimens and equipment preparatory to going out. His collections of plants and insects were practically complete for the region, and he made considerable additions to his collections and studies of fishes and marine and fresh-water invertebrates.

O'Neill and Cox started from Bernard Harbor on March 17, 1916, to continue the survey of the copper-bearing area in the Bathurst Inlet region. They succeeded in cleaning up the work pretty well as planned. Their time was spent in making a more complete geological sheet of the mainland and islands in the upper northwestern portion of Bathurst Inlet. Over 200 islands were mapped in the region generally covered in the charts by Chipman, Lewes and Marcet Islands. The group consists of many small rocky islands which at a little distance have the appearance of forming a continuous coast-line.

The work of O'Neill and Cox in March, April and May, 1916, completed the survey east to Cape Barrow practically as planned. O'Neill summarizes the results of the work in that region as follows: "The copper-bearing rocks in Bathurst Inlet occur on most of the islands west of a line running northwest-southeast from the east side of Lewes Island, and north of Kannayok Island. They cover most of the Banks Peninsula and the western mainland shore from the mouth of Hood River to Moore Bay, extending as much as 5 or 6 miles inland from the coast. These rocks are amygdaloids and form several successive layers which represent progressive, intermittent effusions of lava. Nearly all of them are impregnated with native copper over wide areas. The copper occurs in veins and in amygdules, and is disseminated as pepper throughout the ground mass. I have made a very conservative estimate of the amount of this copper-bearing rock (in which I actually saw native copper) and it seems that two billion tons is well within the limit. It will be necessary to wait for analyses, and for the plotting of the map to give a close estimate of the value of these deposits."

Chipman, with Eskimo camp assistants, and Corporal W. V. Bruce,* R. N. W. M. P., as voluntary aide, left Bernard Harbor on April 12, 1916, to finish the survey of the south side of Coronation Gulf east from the mouth of Rae River (where Cox left off in 1915) to Cape Barrow. Chipman completed this by May 20.

After returning from the Croker River survey I made a trip into the Bathurst Inlet region to investigate the occurrence of ovibos, and other distributional problems of the fauna, as well as look up and assist the various surveying parties on their return.

The snow was pretty soft by May 19, and I could not make the projected inland trip south of Arctic Sound. I met O'Neill and Cox in Bathurst Inlet, and returned to Cape Barrow with them, meeting

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* Corporal Bruce was the guest of the expedition while engaged in gathering evidence about the murder of two Roman Catholic priests two years before. See below.

Chipman's party again on May 21. There was much water on the ice around Cape Barrow May 21, and much slushy snow and water until we got back to Tree River. We remained at the island at the entrance of the harbor from May 25 until May 27 putting the umiak in shape and getting some dog pack-saddles made for Chipman. Chipman had met Mr. D'Arcy Arden from Great Bear Lake near the mouth of the Coppermine River early in the month, and had arranged to go back to Great Bear Lake overland with him. Chipman wanted to go out by the overland route because his work here was finished, and the prospect was good that he would get out a little sooner by Fort Norman and the Mackenzie River, and it was desirable to have news of the Southern party's condition and welfare get outside, in case the remainder of the party on the *Alaska* should be prevented by shipwreck or ice conditions from getting out by way of Point Barrow and Nome, Alaska. Chipman reached the end of the telegraph line at Peace River Crossing on August 18, and Ottawa about the end of the month.

Sending one large sled-load of specimens with some of our Eskimos directly from Port Epworth to Bernard Harbor via Cape Krusenstern, we started west May 27. We found that most of the melted snow water had drained off through cracks in the sea ice, making sled travel much better.

The united sledge parties returned together along the coast as far as the mouth of the Coppermine River, which was reached on the morning of May 31. The river was open to its mouth, and was flooding the ice for about half a mile outside of its mouth. About 125 Eskimos were encamped a little west of the mouth of the river, on the southeast shore of Richardson Bay. Most of them were preparing to start packing overland to Dismal Lake and Dease River, although two or three families were intending to spend the summer hunting caribou around the Rae River, and three or four of the least enterprising families and some older people were intending to spend the summer spearing fish at the rapids of Bloody Fall, about nine miles from the mouth of the river. Chipman and Mr. Arden left the mouth of the Coppermine River on June 1, to pack across country to Great Bear Lake with some good pack dogs,* while the rest of our party started at the same time traveling over the ice along the coast to the station at Bernard Harbor. Considerable stretches of open water were seen south and west of Lambert Island June 5 and 6. The ice is said to be very thin there even in winter and opens up very early in the spring. Great numbers of Pacific and King Eider ducks were seen in the water and on the ice at the water's edge. We reached Bernard Harbor June 6.

Wilkins, with the Eskimo Palaiyak, reached Bernard Harbor on June 15, 1916, having come by sled from the headquarters of the Northern division of the expedition, near the Princess Royal Islands, Prince of Wales Strait; he brought news of the safety of the three vessels of the Northern party, and of the progress of their operations up to May 5, 1916. At the time Wilkins left in May, Stefansson contemplated carrying on his travels on the northern islands until 1917, the *Polar Bear* having been directed to move its base to Winter Harbor, Melville Island, to spend the winter of 1916-17, with the possibility of the party remaining in the Arctic until 1918. The Northern party was stated to have provisions for one or two years more, and were killing and storing away large numbers of caribou and ovibos on Melville Island in the spring of 1916. Quite a number of their engaged western Eskimo hunters had been sent up to Melville Island early in the spring to shoot game for the party's meat supply.

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* For an account of traveling with pack dogs in summer from Coronation Gulf to Great Bear Lake, see "My Life With the Eskimo," Chapter XIII.

The remainder of June and the early part of July were spent in completing collections in the vicinity of Bernard Harbor, and assembling and packing specimens, stores and equipment for shipment out of the Arctic. Space had to be economized on the *Alaska* going out, as far as Herschel Island, as we had to bring out twenty-seven people, viz., eleven white men, including six members of the scientific staff, a crew of three, and two members of the Royal Northwest Mounted Police; fourteen Eskimo employees, seven men, three women, and four children; and two Eskimos held by the Mounted Police for homicide. In addition to this we had to take the Eskimos' personal camp gear and dogs, stores for paying off native employees at Baillie Island and Herschel Island, and enough reserve provisions to provide for the wintering of as many men as might remain with the *Alaska* to take care of the vessel and bring her out the next year in case we should be prevented by ice conditions from sailing from Dolphin and Union Strait to Nome in the summer and autumn of 1916. I also thought it necessary, for the same reason, to keep the skin umiak, two sleds, and two teams of dogs on board at least as far as Point Barrow, Alaska.

In September, 1915, Corporal W. V. Bruce, R. N. W. M. P., came in from Herschel Island, on the return trip of the *Alaska,* to work on the case of the disappearance of Father Rouvier, O. M. I., and Father LeRoux, O. M. I., from the Mission at Fort Norman, who had gone into the country northeast of Great Bear Lake in 1913, and had not been heard of since. Corporal Bruce had spent the winter working on the case, and with the assistance of various members of the expedition, gained considerable information and recovered a quantity of the personal effects of the missing fathers as well as some property which presumably belonged to Messrs. Radford and Street, who were killed by Eskimos in Bathurst Inlet in 1912. In May, 1916, Inspector Charles D. LaNauze, of the Great Bear Lake patrol, came down to Coronation Gulf* with a party from his winter quarters near old Fort Confidence on Dease River, and in the same month the police made prisoners of the two Eskimos, Sinnisiak and Uluksak,* who had killed the priests. Both prisoners were taken to Bernard Harbor and in July we took Inspector LaNauze and Corporal Bruce out as passengers on the *Alaska* from Bernard Harbor to Herschel Island. All relations of the Royal Northwest Mounted Police with the expedition have been most cordial, and while with the expedition, both Inspector LaNauze and Corporal Bruce did everything they could as volunteer assistants in whatever work was going on.

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* Inspector LaNauze had for servants and guides the family of Ilavinirk who had been in the service of the Stefansson-Anderson Expedition, 1908-1912. See index of "My Life With the Eskimo," for references to Ilavinirk.

The *Alaska* left a large permanent cache of provisions in the house at Bernard Harbor, in case any parties should come down from the Northern section during the next winter. The house was left in custody of the Rev. H. Girling, who wintered near Clifton Point with the mission schooner *Atkon,* and intended to establish a mission station at Bernard Harbor in the summer of 1916.**

The Hudson's Bay Company's schooner *Fort Macpherson,* with Mr. W. G. Phillips in charge, sailed from Herschel Island July 28, 1916, after our arrival there, for the purpose of establishing a permanent trading post for the company at Bernard Harbor.

The *Alaska,* with all members of the Southern party on board, left our headquarters for the past two years, at Bernard Harbor, July 13, 1916. We reached Pierce Point Harbor about midnight on July 23, and Herschel Island July 28.

[At Baillie and Herschel Islands the Eskimo members of the party were discharged. The *Alaska* reached Nome August 15, 1916.]

The extensive collections made by the party in geology and mineralogy, ethnology, and archæology, terrestrial and marine biology, botany and photography, and our records and papers were landed safely at Nome. As it was considered much safer to ship the results of our three years' work out by the regular freight and passenger service from Nome than to risk taking them through the north Pacific to Victoria on a small schooner like the *Alaska* in the autumn season, all the collections, scientific instruments, and what equipment was worth shipping back, was trans-shipped to Seattle on the steamship *Northwestern,* of the Alaska Steamship Company. The members of the party also took passage to Seattle on the same steamer, leaving Nome August 27, and reaching Seattle via the inside passage on September 11, 1916. All collections had been safely received in Ottawa by the end of October, 1916.

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* Uluksak had spent the summer 1910 with Stefansson's party on the Coppermine River and Dismal Lake.

** Eventually this house became the permanent station of the Anglican Mission, being presented to them, along with the stores, by the Government.

## WHO'S WHO OF THE EXPEDITION

ANDERSEN, KARSTEN (CHARLIE). See Exploratory Party, 1916 and 1917.

ANDERSON, ALEXANDER. First officer on *Karluk*. After the wreck of the *Karluk,* he was sent towards shore in command of a party that was lost on the ice.

ANDERSON, RUDOLPH M. See Scientific Staff.

ANDREASEN, OLE. See Exploratory Party, 1914 and 1915.

ASASELA, JAMES (JIM FIJI). See *Polar Bear,* 1916 and 1917.

BAUR, WILLIAM J. (LEVI). Steward; see Kellett Base, 1914, 1915, and *Polar Bear,* 1916 and 1917.

BARKER, CHARLES. Second Mate on the *Karluk*. Was a member of the first party sent towards shore after the *Karluk* sank. The party of four were lost on the ice before reaching Wrangel Island.

BARTLETT, ROBERT A. See Commanders of Ships.

BERNARD, PETER. See Commanders of Ships.

BEUCHAT, HENRI. See Scientific Staff.

BINDER, OTTO. See *Challenge,* 1917.

BLUE, DANIEL WALLACE. Engineer of the *Mary Sachs*. Died at the Baillie Islands, May 2, 1915.

BOLT, IKEY. Eskimo; see *Alaska* and *North Star,* 1914, 1915.

BRADY, JOHN. Sailor. Lost on the ice near Wrangel Island after the sinking of the *Karluk,* while a member of the first shore-going party.

BREDDY, G. Fireman on the *Karluk*. Was a member of the party that reached Wrangel Island after the *Karluk* sank, but committed suicide there the summer of 1914.

BROOKS, CHARLES. Steward on *Alaska,* 1913.

CASTEL, AARNOUT. See Commanders of Ships or Divisions.

CHAFE, ERNEST F. Messroom boy on the *Karluk*. A member of the party that reached Wrangel Island and among the survivors who were rescued the fall of 1914.

CHIPMAN, KENNETH G. See Scientific Staff.

COX, JOHN R. See Scientific Staff.

CRAWFORD, J. R. See *Mary Sachs,* 1913, and Exploratory Party, 1914 and 1915.

DONOHUE, PETER. See *Polar Bear,* 1917.

EMIU (SPLIT-THE-WIND). Cabin Boy; see *Polar Bear,* 1916, and Exploratory Party, 1916 and 1917.

ESKIMOS. Many unnamed.

GONZALES, HENRY. See Commanders of Ships.

GUMAER, G. G. Accompanied Storkerson on exploratory trip of 1918.
HADLEY, JOHN. See Commanders of Ships.
HOFF, J. E. Engineer of *Alaska*, 1916.
ILLUN. Eskimo. Member of *Polar Bear* crew.
JENNESS, DIAMOND. See Scientific Staff.
JOHANSEN, FRITS. See Scientific Staff.
JONES, J. J. Engineer of the *Polar Bear;* died suddenly of heart disease, 1916.
KILIAN, HERMAN. See *Polar Bear*, 1916 and 1917.
KILIAN, MARTIN. See *Polar Bear*, 1916 and 1917; also Exploratory Party, 1918.
KING, A. Sailor. Was a member of the party that was lost on the ice while trying to reach Wrangel Island after the sinking of the *Karluk*.
KNIGHT, E. LORNE. See *Polar Bear*, 1916; and Exploratory Party, 1917 and 1918.
LEFFINGWELL, ERNEST DE KOVEN. Guest; see *Mary Sachs*, 1913.
LOPEZ, PETER. See *North Star*, 1916, etc.
LOPEZ, MRS. PETER. See *North Star*, 1916, etc.
MACKAY, A. FORBES. See Scientific Staff.
MCCONNELL, BURT M. See Scientific Staff.
MCKINLAY, WILLIAM LAIRD. See Scientific Staff.
MALLOCH, GEORGE. See Scientific Staff.
MAMEN, BJARNE. See Scientific Staff.
MASIK, AUGUST. See *Mary Sachs*, 1917, and Exploratory Party, 1918.
MAURER, FREDERICK W. A member of the party that reached Wrangel Island after the sinking of the *Karluk*, and among the survivors who were rescued the fall of 1914.
MIKE. Eskimo. See *Alaska* and *North Star*, 1914.
MORRIS, S. STANLEY. Sailor. Lost on the ice near Wrangel Island after the sinking of the *Karluk*.
MURRAY, JAMES. See Scientific Staff.
NAHMENS, OTTO. See Commanders of Ships.
NATKUSIAK. Eskimo. See Ships' Crews and Exploratory Parties.
NOICE, HAROLD. See Exploratory Party, 1916 and 1917.
NOREM, ANDREW (ANDRE). Steward on *Mary Sachs*. Committed suicide April 16, 1914.
OLESEN, LOUIS. See *Alaska*, 1913, 1914, 1915.
O'NEILL, JOHN J. See Scientific Staff.
PALAIYAK. Eskimo. See Ships' Crews.
PIKALU. Eskimo. See Ships' Crews.
SEYMOUR, WILLIAM. Second officer of *Polar Bear*. See 1916, 1917.
SHANNON, ANTHONY. See *Polar Bear*, 1917 and 1918.
STEFANSSON, VILHJALMUR. See Scientific Staff.
STORKERSON, STORKER T. See Commanders of Ships or of Divisions.

Storkerson, Mrs. S. T. See Kellett Base, 1915; Melville Island, 1916.

Storkerson. Two daughters.

Sweeney, Daniel. See Commanders of Ships.

Templeman, Robert. Steward. A member of the party that reached Wrangel Island after the sinking of the *Karluk,* and among the survivors who were rescued.

Thomsen, Charles (Karl). See Kellett Base, 1914; Exploratory Party, 1915, 1916. Died the winter of 1916-17 while crossing Banks Island.

Thomsen, Mrs. Charles. See Kellett Base.

Thomsen, Annie. Daughter of Mr. and Mrs. Charles Thomsen.

Ulipsinna. Eskimo. See *Polar Bear* and Exploratory Party, 1917.

Volki, Fred. See *Polar Bear,* 1917-18.

Wilkins, George H. See Scientific Staff.

Williams, H. Sailor. One of the survivors of the *Karluk* who were rescued from Wrangel Island the fall of 1914.

Williamson, Robert J. Second engineer on *Karluk.* A member of the party that reached Wrangel Island after the sinking of the *Karluk,* and one of the survivors who were rescued that fall.

## SCIENTIFIC STAFF

Unless otherwise stated, each man was a citizen of the country of his birth. Those whose birthplace is not mentioned were native-born Canadians.

ANDERSON, RUDOLPH M. Second-in-command of the expedition. Zoölogist. Born American, but has since become naturalized Canadian. A graduate of and three years post-graduate study at the University of Iowa, and a member of the Geological Survey of Canada. He accompanied the author on his expedition of 1908-12. Four winters in Arctic before beginning of this expedition.

BEUCHAT, HENRI. Anthropologist, of Paris. Studied at the Sorbonne and later attained distinction as a writer on American archæology and ethnology. He was lost on the ice near Wrangel Island after the sinking of the *Karluk*.

CHIPMAN, KENNETH GORDON. Topographer. A graduate of the Massachusetts Institute of Technology, and had had several years' experience in the topographical division of the Geological Survey of Canada.

COX, JOHN RAFFLES. Assistant topographer. After graduating from McGill University, he had been a member of the topographical division of the Geological Survey of Canada. After the return of the Southern Section in 1916 he served in the World War.

JENNESS, DIAMOND. Anthropologist. Rhodes Scholar at Oxford from New Zealand; before joining the expedition he had had field experience in ethnology in New Guinea. After the Southern Section returned south, he served in the World War.

JOHANSEN, FRITS. Botanist and marine biologist. Born in Denmark. Had formerly been with Mylius Erichsen in East Greenland and had done entomological and other scientific work for the Department of Agriculture at Washington.

MACKAY, ALISTER FORBES. Surgeon, of Scotland. Served in the British navy after graduation from the University of Edinburgh, and later accompanied Shackleton to the Antarctic. He was lost on the ice near Wrangel Island after the sinking of the *Karluk*.

MCCONNELL, BURT M. Meteorologist. American. He accompanied the author ashore from the *Karluk* and remained with the expedition during the winter 1913-14. After severing his connection with the expedition, he went to Alaska and assisted in the rescue of the men from Wrangel Island. Later served in the War, in the United States Air Service.

McKinlay, William Laird. Magnetician, of Scotland. After graduation from the University of Glasgow, was instructor in mathematics in Shawland's Academy of Glasgow, and during spare time assisted Dr. W. S. Bruce, of the Scottish Oceanographical Laboratory. After the sinking of the *Karluk,* he was among the survivors who were rescued from Wrangel Island. He returned to Scotland and served through most of the Great War.

Malloch, George S. Geologist. Had been a graduate student at Yale and was a member of the Geological Survey of Canada. He was an expert on coal deposits and stratiography generally. He died in Wrangel Island the spring of 1914 after the sinking of the *Karluk.*

Mamen, Bjarne. Assistant to the geologist (Mr. Malloch), of Christiania, Norway. Had been with the Norwegian-Spitsbergen Expedition, and later had worked in the forests of British Columbia. He was a member of the party that reached Wrangel Island after the sinking of the *Karluk,* but died there the spring of 1914.

Murray, James. Oceanographer, of Glasgow. Had worked for many years with Sir John Murray, one of the world's greatest oceanographers. He had been with Shackleton in the Antarctic and afterwards had been biologist of the boundary survey of Colombia. He was lost on the ice near Wrangel Island after the sinking of the *Karluk.*

O'Neill, John J. Geologist. Had specialized in pre-Cambrian geology and in copper-bearing rocks. A graduate of McGill University and later studied at Yale.

Stefansson, Vilhjalmur. Commander of the expedition, anthropologist, geographer. Graduate of the University of Iowa, three years' post-graduate study at Harvard. Two previous arctic expeditions—1906-07 and 1908-12. Five winters in the Arctic before beginning this expedition.

Wilkins, George H. Photographer, of Australia. Studied at Adelaide University and before joining the expedition had been a photographic correspondent in the Balkan War. He returned south in 1916 and served with the Australian flying forces during the two remaining years of the War. He was awarded the Military Cross and was promoted Captain.

# COMMANDERS OF SHIPS OR DIVISIONS OF THE EXPEDITION

ANDERSON, R. M. See Scientific Staff.

BARTLETT, ROBERT ABRAHAM. Born in Newfoundland, but naturalized American. Had been with Peary on two expeditions, spending altogether three winters in polar regions. Was Master of Peary's *Roosevelt,* 1908-09. Master of *Karluk,* 1913-14.

BERNARD, PETER. American citizen of Canadian birth (Prince Edward Island). Had followed sea around Nome for many years. Had been Captain and owner of the *Mary Sachs* before she was purchased by the expedition.

CASTEL, AARNOUT. Born in Holland and a graduate of a naval school there. Had been with whaling ships and was personally known to author since their meeting at Herschel Island, 1906. Master of *North Star.* Later in charge at Cape Kellett and Master of *Challenge.*

CHIPMAN, K. G. See Scientific Staff.

GONZALES, HENRY. Born in Portugal. Had been whaler in Arctic for many years. Was First Officer of *Polar Bear* when she was purchased by the expedition. Master *Polar Bear,* 1915-17.

HADLEY, JOHN. Born at Canterbury, England. During a varied career he had been an officer in the Navies both of China and Chile. Petty Officer on the U. S. Revenue Cutter *Thetis* in 1889 when she went to Arctic to determine the location of Herschel Island. Had spent more than twenty-five years in the Arctic and personally known to author since 1908. Was member *Karluk* crew. Later Second Officer (1915-17) and Master (1917-18) of *Polar Bear.* Died in San Francisco of influenza, 1918.

NAHMENS, OTTO. American. Had followed sea around Nome and had also been a miner there. Master of *Alaska,* 1913-14.

PEDERSEN, THEODORE (C. T.). Born in Denmark, naturalized American. Had been whaler in Arctic waters about 10 years. Selected *Karluk* as best available ship for expedition. Master of *Karluk,* 1913, on voyage San Francisco to Victoria, British Columbia, and in charge of her during repairing at Esquimalt Navy Yard. In 1914 as Master of *Herman* picked up Captain Bartlett at Emma Harbor and thus assisted in rescue of *Karluk* survivors.

STORKERSON, STORKER T. Born in north of Norway. Associated with author first when both were members of the Leffingwell-Mikkelsen

Polar Expedition, 1906-07, where Storkerson was First Officer. Was for a time member of the Stefansson-Anderson Expedition of 1908-12. Had already lived in Arctic seven years before he joined the Canadian Arctic Expedition. Was ranking member of expedition after departure of Wilkins (1916). In charge ice drift, 1918.

SWEENEY, DANIEL. American. Had been whaler in Arctic for many years. Master of *Alaska,* 1914-16.

WILKINS, G. H. See Scientific Staff.

*1913:*

*Karluk:*
Barker, Bartlett, Beuchat, Brady, Breddy, Chafe, Hadley, Jenness, King, Mackay, Malloch, Mamen, Maurer, McConnell, McKinlay, Morris, Murray, Stefansson, Templeman, Wilkins, Williams, Williamson, seven Eskimos.

*Alaska:*
Anderson, Brooks, Cox, Johansen, Nahmens, Olesen, O'Neill.

*Mary Sachs:*
Bernard, Chipman, Crawford, Leffingwell (guest), Norem, Thomsen, Thomsen (Mrs.), Thomsen (Annie), one Eskimo.

*1914:*

*Exploratory Party:*
Andreasen, Bernard, Castel, Crawford, Johansen, McConnell, Stefansson, Storkerson, Wilkins.

*Alaska and North Star:*
Anderson, Bolt (Ikey), Chipman, Cox, Johansen, Mike, Olesen, O'Neill, Palaiyak, Sullivan, Sweeney.

*Kellett Base:*
Baur, Bernard, Crawford, Thomsen and family.

*1915:*

*Kellett Base:*
Baur, Bernard, Crawford, Natkusiak, Storkerson (Mrs.), Thomsen, Thomsen (Mrs.), Wilkins.

*Exploratory Party:*
Andreasen, Crawford, Natkusiak, Stefansson, Storkerson, Thomsen, Wilkins.

*Alaska:*
Anderson, Castel, Cox, Johansen, Olesen, O'Neill, Sullivan, several Eskimos.

*1916:*

*North Star:*

Castel, Lopez, Lopez (Mrs.), Natkusiak, Wilkins.

*Mary Sachs:*

Bernard, Knight, Thomsen, Thomsen (Mrs.) and Family, four Eskimos.

*Polar Bear:*

Andersen, Asasela, Baur, Emiu, Gonzales, Hadley, Jones, Kilian, H., Kilian, M., Noice, Stefansson, Seymour, eight Eskimos.

*Exploratory Party:*

Andersen, Castel, Emiu, Kilian, H., Kilian, M., Natkusiak, Noice, Stefansson, Storkerson, Thomsen, Wilkins.

*Hunting Party on Melville Island:*

Castel, Emiu, Lopez and wife, Natkusiak, Storkerson, wife, and two baby daughters, five other Eskimos.

*Alaska:*

Anderson, Castel, Cox, Hoff, Johansen, Olesen, O'Neill, Sullivan, several Eskimos.

*1917:*

*Exploratory Party:*

Andersen, Castel, Emiu, Illun, Knight, Natkusiak, Noice, Pikalu, Stefansson, Storkerson, Ulipsinna.

*Polar Bear:*

Asasela, Baur, Donohue, Gonzales, Gumaer, Hadley, Kilian, H., Kilian, M., Lopez, Seymour, Shannon, Storkerson, about ten Eskimos.

*Mary Sachs:*

Andersen, Binder, Castel, Masik.

*Challenge:*

Binder, Emiu, Knight, Masik, Noice, Stefansson.

*1917-1918:*

*Polar Bear:*

Andersen, Baur, Castel, Donohue, Gumaer, Hadley, Kilian, H., Kilian, M., Knight, Masik, Shannon, Stefansson, Storkerson, Volki, ten Eskimos.

*1918:*

*Exploratory Party:*

Andersen, Castel, Emiu, Gumaer, Kilian, H., Kilian, M., Knight, Masik, Storkerson, Volki, two Eskimos.

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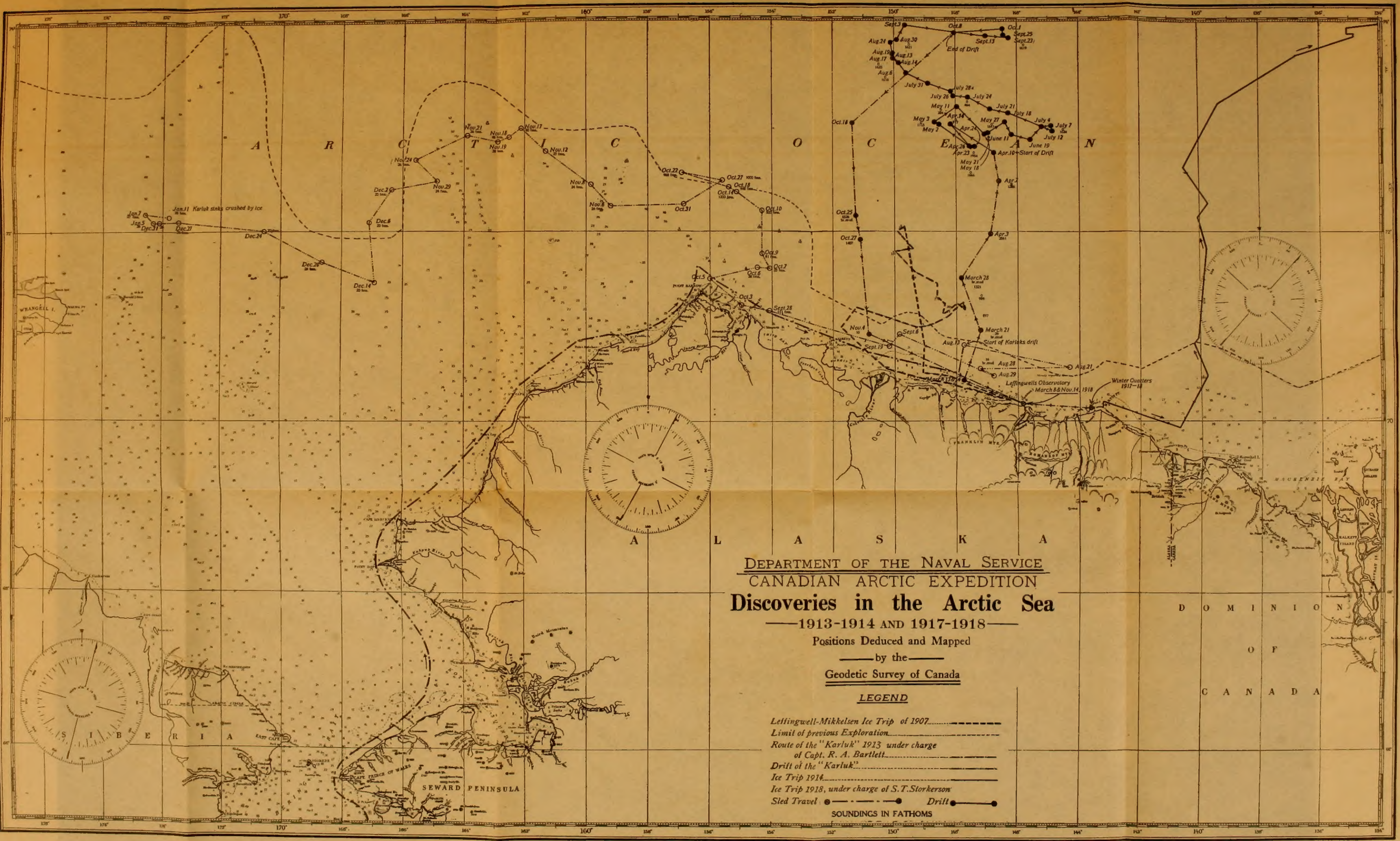

DEPARTMENT OF THE NAVAL SERVICE

CANADIAN ARCTIC EXPEDITION

# Discoveries in the Arctic Sea

## 1913-1914 AND 1917-1918

Positions Deduced and Mapped
by the
Geodetic Survey of Canada

LEGEND

*Leffingwell-Mikkelsen Ice Trip of 1907*
*Limit of previous Exploration*
*Route of the "Karluk" 1913 under charge of Capt. R. A. Bartlett*
*Drift of the "Karluk"*
*Ice Trip 1914*
*Ice Trip 1918, under charge of S.T. Storkerson*
*Sled Travel* ●—·—·—● *Drift* ●——●

SOUNDINGS IN FATHOMS

BY THE U.S. COAST AND GEODETIC SURVEY

JUL 31 1920

(Arctic Coast of Alaska) C & G S 9400

DEPARTMENT OF THE NAVAL SERVICE

# KEY MAP
of
# Canadian Arctic Expedition
# DISCOVERIES IN THE ARCTIC SEA
## 1913–18

Positions Deduced and Mapped
by the
Geodetic Survey of Canada